

# AUTOMOTIVE INDUSTRIES

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Number 1

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# AUTOMOTIVE INDUSTRIES

VOLUME 54

Philadelphia, Thursday, January 7, 1926

NUMBER 1

## Dollar Rubber—Can We Bring It Down?

*Automotive manufacturers aroused by British monopoly and resultant high prices. Steps taken to conserve supplies. Natural shortage seen soon.*

By Norman G. Shidle

AMERICAN automotive manufacturers have determined not to submit without strenuous resistance to the imposition of something over \$500,000,000 a year excess charges for the rubber which they must import from foreign countries.

The situation as it stands today is pretty clearly understood by automotive executives through recent utterances of Secretary of Commerce Herbert Hoover. Briefly stated by Mr. Hoover, the facts are:

"The control of rubber production in the British East Indies was organized under the Stevenson plan in 1922. That area produces about 70 per cent of the world's rubber, and we consume about 70 per cent of the world's rubber. At the time the plan was put into effect by Colonial legislation the claim was made that its purpose was to assure a fair price to the growers. The Growers Committee stated that such a fair price would be from fifteen to eighteen pence (30 to 36 cents) per pound. We were assured that this 'fair' price was the sole objective of the combination. Exhaustive investigations of the Department of Commerce into the industry in the East Indies showed that at that price the capital invested in the industry would earn an annual average profit of from 15 to 25%.

"The price has been advanced during this year, at one time reaching a peak of \$1.21 per lb. (Since then it has ranged from about 90 cents to \$1.10 per lb.)

"Our imports for 1925 will be about 860,000,000 lbs. and at normal growth our consumption will be 900,000,000 lbs. in 1926. At the price declared by the price fixing body as 'fair' to them, our next year's supply would cost us about \$324,000,000, but at the present prices of \$1.10 per lb. it will cost us about \$990,000,000 or \$666,000,000 in excess of the 'fair' price." With a full realization of these facts

coming before the industry and the country, moves in the rubber situation have been rapid in the last few weeks.

In addition to an increase in general discussion about the ultimate outcome of the rubber situation, greater interest has been generated in immediate means of offsetting current high prices. Harvey Firestone was quoted a few days ago as expressing the opinion that the peak in rubber prices has been reached. While other authorities do not all agree with that conclusion, there can be no doubt that every effort will be made by American car and rubber producers to bring it about.

Mr. Hoover's speech before the Erie Chamber of Commerce, outlining the facts stated above, acted more or less as the spark



He Hopes it is True That "Whatever Goes Up Must Come Down"



which ignited the fuse of recent activity. That speech was made on Octber 31. Its discussion of the rubber situation was amplified by Mr. Hoover in a letter to Senator Capper, December 10.

Since then events have moved quickly:

On December 15, the day on which Mr. Hoover's letter to Senator Capper was made public, rubber dropped about 20 cents from the \$1.10 level at which it was standing.

On December 21, the House of Representatives approved a resolution to have the Committee on Interstate and Foreign Commerce investigate the rubber situation.

On December 22, representatives of the National Automobile Chamber of Commerce, of the Rubber Association of America and of the American Automobile Association met with Secretary Hoover in Washington and agreed on a campaign to urge more economical use of rubber upon the people and industries of the United States.

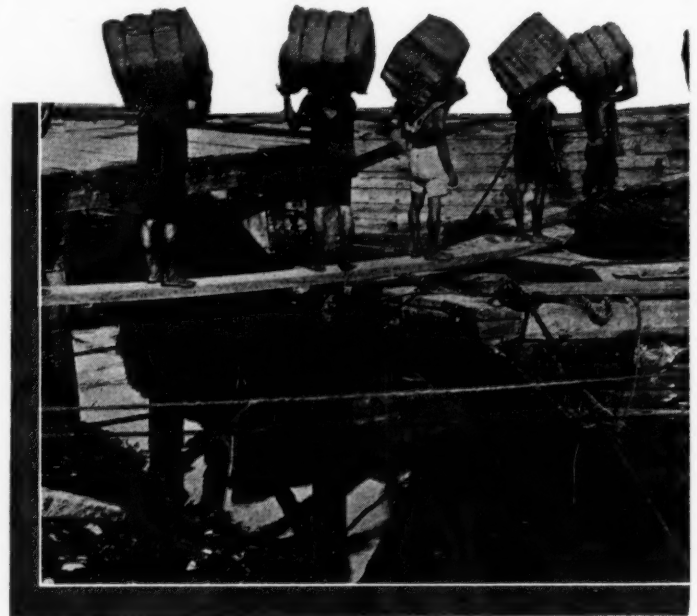
Shortly before the beginning of the new year, tire manufacturers notified automobile makers of an increase in the price of tires for original equipment, the increases being said to range from \$20 to \$40 per set of tires.

On Dec. 23, Eric Miller, former president of the Rubber Growers' Association, issued a statement in England saying that hand to mouth buying policy of American rubber manufacturers a year or so ago is responsible for present high prices. Increased buying would have raised price sufficiently to make greater production releases under Stevenson plan, Miller claims, laying blame for situation on Americans.

The present high rubber and tire prices come at a particularly unfortunate time for the passenger car manufacturers.

The automotive industry is about to receive a large tax reduction from Congress. In urging that reduction, the industry pledged itself to reduce the delivered car prices to the same extent as taxes were removed. Both the indus-

*Crude rubber on its way from Singapore to the United States. The rubber, in bales, is carried by coolies from the warehouses, a few blocks away, to a lighter, or tongkong, and taken out to the waiting ships. Each bale weighs from 200 to 300 lb. and at prevailing prices is worth from \$200 to \$300*



try and Congress expect that pledge will be made good.

But the higher tire prices forecast by an announcement near the end of 1925 very nearly offset any advantage gained in reduced taxes. Therefore car prices—to meet the requirements of the industry's pledge to Congress—might be expected to remain where they are now. This condition and this reasoning is perfectly clear to anyone familiar with the facts of the case; to get it across to the public is another thing. But advances in tire prices in 1925 were an important item in car costs.

Since the first of 1925 there have been five advances in prices of tires and tubes. On May 1 there was an advance of 5 to 15 per cent. On June 1, July 1, July 15 and Oct. 15 advances were from 10 to 20 per cent. In November was announced another increase to take effect after Jan. 1. Estimating the average advance in each instance as 15 per cent on popular-priced tires, present prices are about 100 per cent higher than on January 1, 1925. Tires to dealers have advanced about 60 per cent since May.

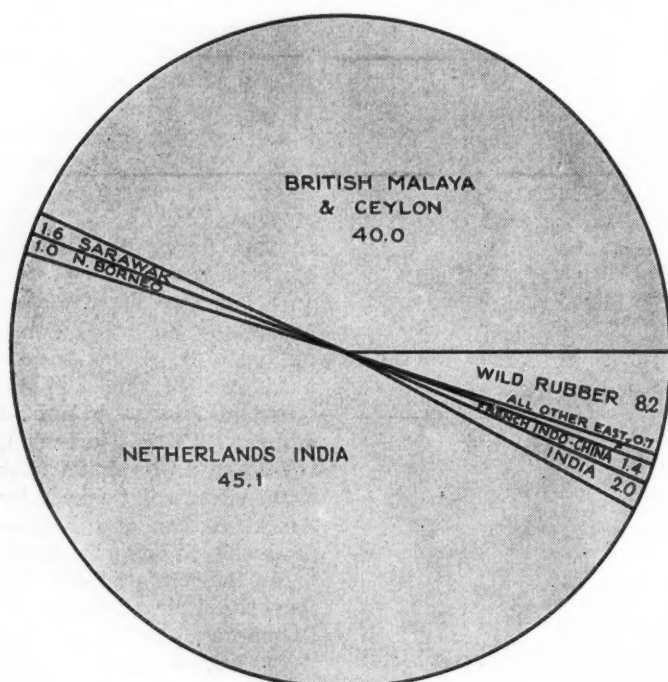
While higher tire prices undoubtedly are justified, the last increase has come at an unfavorable time for car makers.

What can be done about it?

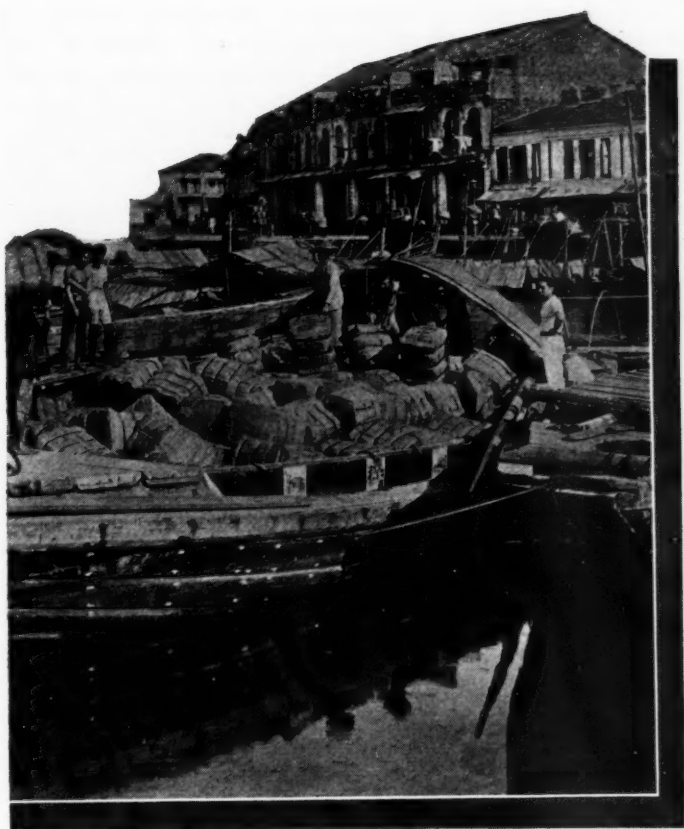
Possibilities of immediate remedies and of fundamental or general remedies must be discussed separately, although both work toward the same end. The immediate remedies, however, involve action as related only to facts of an immediate situation; discussion of eventual moves must involve a fuller consideration of basic causes; the origin and development of the Stevenson plan; possibilities of rubber production and probabilities about consumption; advisability and possibilities of America controlling through its own nationals sufficient crude rubber producing areas to insure our manufacturers against a foreign combination such as exists today, and other questions of a broad character.

Immediately nine lines of attack—most of them already suggested by Mr. Hoover—seem possible. Action already

### Where World's Rubber is Produced







is going forward along several of these lines. Here they are:

1. A huge campaign for conservation of rubber already has been started. It is being carried on by the N. A. C. C., the Rubber Association of America, the A. A. A., the N. A. D. A. and other automotive organizations and companies.

2. American bankers are cooperating with the government to the extent of refraining from lending money to those affiliated with the foreign rubber monopolies.

3. Synthetic rubber already has been made. It was manufactured and used to some extent in Germany during the war. The high price at which it has been produced, however, is an almost insurmountable obstacle to its use even with the present prices of crude rubber.

4. Use of reclaimed rubber can be increased at once.

5. Manufacture and use of rubber substitutes can be encouraged and stimulated.

6. Some sort of properly controlled machinery, Mr. Hoover suggests, might be set up to prevent the many American buyers from bidding against one another and thus stimulating the price still further.

7. Through special financial arrangements with South American wild rubber production there might be stimulated materially in the next two years.

8. Production of Guayule rubber, a crude obtained from a shrub which grows in Mexico and in the Southwestern part of the United States, might be stimulated to some extent, although the quantity possibilities from this source do not seem to amount to very much in proportion to our total needs.

9. Increased standardization of tire sizes.

The campaign for conservation which is going forward

with the slogan of "Stretch Your Rubber" seems likely to be one of the most effective of the immediate remedies for an unfortunate situation. In furthering this movement the car and truck manufacturers will devote a part of their national and newspaper advertising space to emphasizing the need for better care of tires. The Automobile Association of America will issue an appeal for tire economy to the users of vehicles, while the National Automobile Dealers' Association will work through its membership to further the idea.

It is impossible to estimate how much saving in demand for rubber will be accomplished by this "Stretch Your Rubber" campaign, but with the forces of the government and the industry behind it, it is reasonable to believe that very real progress can be made.

#### Tire Dealers Will Cooperate

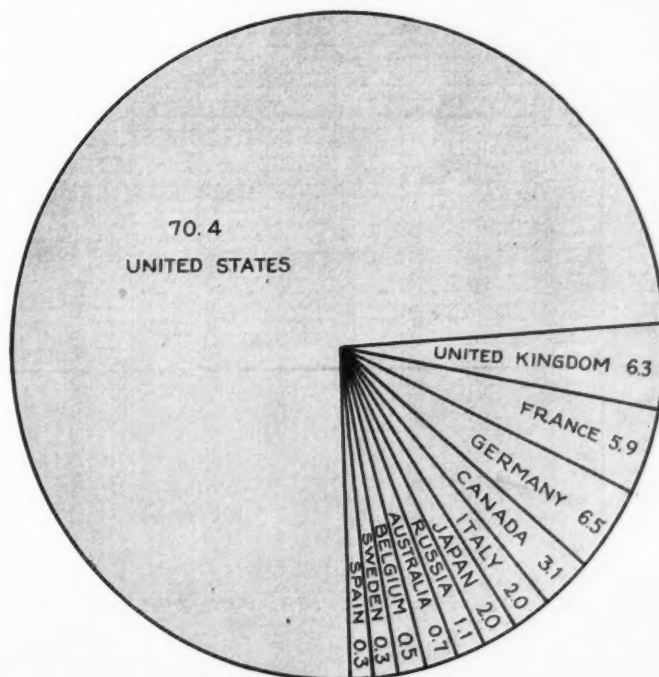
Tire dealers are planning to cooperate in the "Stretch Your Rubber" movement and are in accord with the general efforts to break the foreign monopoly. This group sees increased standardization as one of the best means of eliminating rubber waste, according to George J. Burger, secretary-treasurer and former president of the National Tire Dealers Association.

Increased use of reclaimed rubber already has taken place in the last year. Production of reclaimed rubber in the third quarter of 1925 was 31,909 tons against 16,678 tons in the same quarter of 1924, while shipments were 29,910 in the third quarter of 1925 as compared with 15,231 in the same period of 1924. A total of something like 210,000,000 lb. of reclaimed rubber was consumed in the United States during 1925. It is now estimated that the rubber reclaiming industry of the United States will be able to produce around 200,000 tons in 1926.

High crude rubber prices automatically increase the production of reclaimed rubber.

Use of reclaimed rubber in tires, of course, decreases tire life but is feasible nevertheless. The results of recent tests made by the Bureau of Standards indicate that if reclaimed rubber is used the resistance to wear is lowered roughly in proportion to the quantity used. Even when as much as 25 per cent reclaimed rubber is used, the

#### Where World's Rubber is Consumed



Bureau tests show a tread still can be made at least 70 per cent as durable as the one containing new rubber only.

Rubber substitutes, particularly in products often included in mechanical rubber goods lists, offer an excellent opportunity for further decreasing the use of crude rubber immediately. These rubber substitutes offer much better immediate possibilities than any development of synthetic rubber, although the latter is produceable.

Synthetic rubber was produced in Germany during the war, and while some of it was used for rubber tires most of the several hundred tons made were turned into hard rubber and used for storage battery cells for submarines.

### The Scientific Facts

The scientific facts relating to the synthetic production of rubber are briefly as follows: The chief component of India rubber is isoprene, a hydrocarbon compound belonging to the acetylene series. Compounds of carbon and hydrogen form a large proportion of the products of vegetable growth, and they are also found in coal, petroleum and other mineral products. Hydrocarbons divide into several series, according to the proportion of hydrogen and carbon atoms in the molecule and their relative arrangement therein. Those hydrocarbons containing the largest percentage of hydrogen are known as saturated, while those with a smaller percentage of hydrogen, and the hydrogen and carbon atoms arranged in such a way that the molecule is capable of taking up additional hydrogen atoms, are called unsaturated.

It has been known for about 30 years that, by the application of heat and pressure and the use of catalysts, any unsaturated hydrocarbon can be made to take up additional hydrogen, and so be changed into a hydrocarbon of a different series or group. It is this principle on which the synthetic production of rubber is based.

Guayule rubber, while satisfactory from a technical standpoint can be depended upon for only about 10,000,000 lb. of the 900,000,000 lb. likely to be consumed by the United States in 1926. Consequently, even though production of this type of rubber were stimulated considerably, it could not be expected to have any very material effect on the market.

Guayule rubber, as is generally known, comes from a shrub, eighteen to thirty inches in height, which grows in a certain alkali soil extending from Texas down through Mexico. The rubber obtained from this plant is not a milk or latex but a film between the bark and the skin. To get the rubber, the shrub is ground into fine particles which are rubbed together by special machinery until a separation has been made. The whole mass is then floated in water until the wood has become water-logged and sinks, leaving the rubber floating on the water. The commercial possibilities of this type of rubber have been known since 1904, when they were discovered by E. B. Aldrich, son of the late Senator Nelson W. Aldrich.

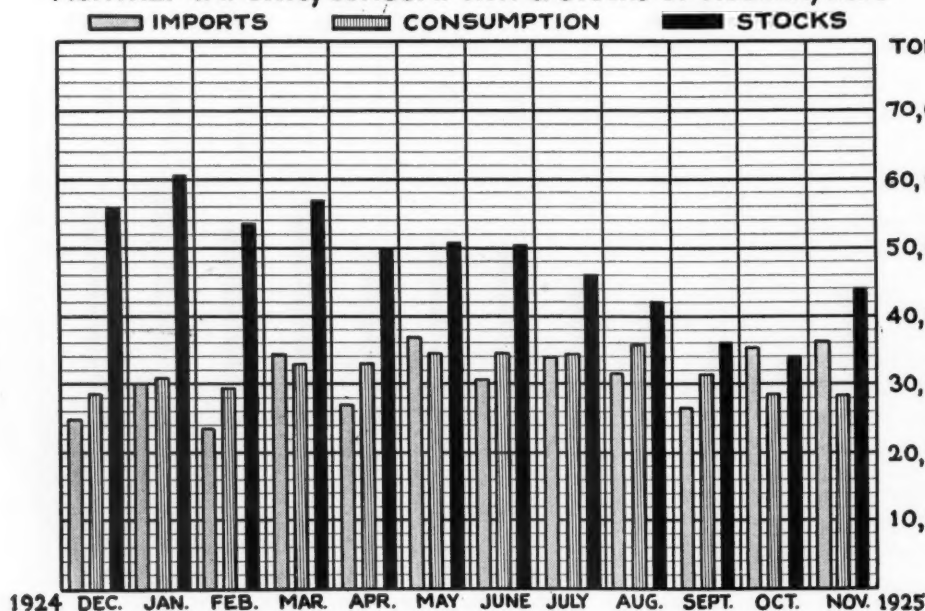
Not one of these immediate activities would be enough to affect materially the demand for rubber from the foreign monopoly which now controls production, but with serious effort applied along each line there is reason to believe that a real dent in the monopoly is not outside the bounds of reasonable expectation.

With immediate steps under way to offset an acute condition, it becomes worth while to examine, as dispassionately as possible, some of the more fundamental aspects of the situation.

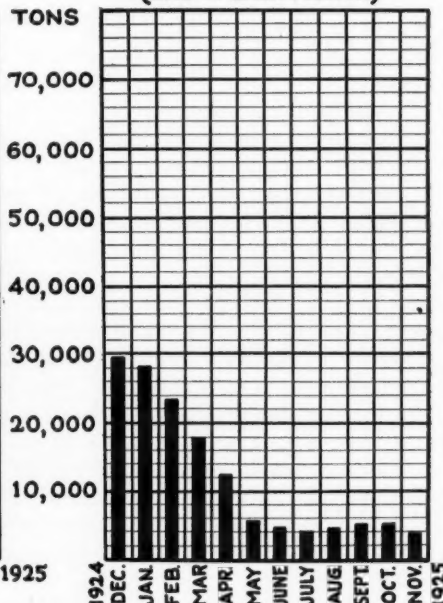
The possibility of a true shortage in the future, in addition to that caused by the Stevenson plan, is an important element in considering the American relation to the situation. That a true shortage is possible within a few years is indicated by the forecast of consumption made in May, 1924, by Raymond B. Prescott for the Rubber Association of America and by the analysis of world production probabilities made by David M. Figart, special agent of the U. S. Department of Commerce. These analysis show:

WORLD PRODUCTION		YEAR	WORLD CONSUMPTION	
Actual	Estimates of Potential Production		Actual	Estimates of Normal Consumption
426,373	531,000	1924	477,500	505,000
498,500	574,000	1925	554,000	540,000
	606,000	1926		575,000
	623,000	1927		608,000
	633,000	1928		641,000
	637,000	1929		672,000
	641,000	1930		703,000

MONTHLY IMPORTS, CONSUMPTION & STOCKS of RUBBER, U.S.A.



LONDON STOCKS of RUBBER  
(END OF EACH MONTH)



Charts by Crude Rubber & Foreign Produce Corp., New York



Thus it appears that even with production proceeding at a normal rate the demand normally might have been expected to exceed the supply in 1928, with the margin between them increasing from that time on, unless, in the meantime, measures to stimulate production had been taken.

That the estimates on world consumption are reasonably accurate is indicated by the fact that the estimate for 1924 came within 6 per cent of accuracy, while that for 1925 was within about  $2\frac{1}{2}$  per cent.

The production estimates, of course, cannot be counted upon because output is being limited by artificial means. They can be considered high, however, rather than low for this reason.

The United States consumes slightly over 70 per cent of the total rubber output. That means that in 1926 it will use something like 412,000 tons of rubber, minus whatever savings are effected by the "Stretch Your Rubber Campaign," the use of substitutes, etc. In 1930 the United States will require probably about 504,000 tons of rubber.

What chance is there of Americans producing on plantations which they own sufficient tonnage to make a real reduction in the total tonnage required from the foreign monopoly?

#### American Production Figures

Not very much, unless they succeed in getting control of very large areas which already have reached the producing stage. This is the only conclusion that seems possible from an analysis of the facts, even when we give ourselves the benefit of every doubt in making rough calculations. Here's about the way it lines up:

	Tons per year
American owned acreage in Far East now producing (100,000 acres) .....	16,000
American owned acreage in Far East not yet producing (may yield) (50,000 acres) .....	8,000
Firestone-Liberia project (already producing) (2,000 acres) .....	320
Firestone-Mexico project (may yield) (35,000 acres) .....	5,570
	29,890 tons
(Firestone's 1,000,000 acre Liberia lease has been left out of this calculation because of the difficulty of estimating its potentiality in the next decade)	

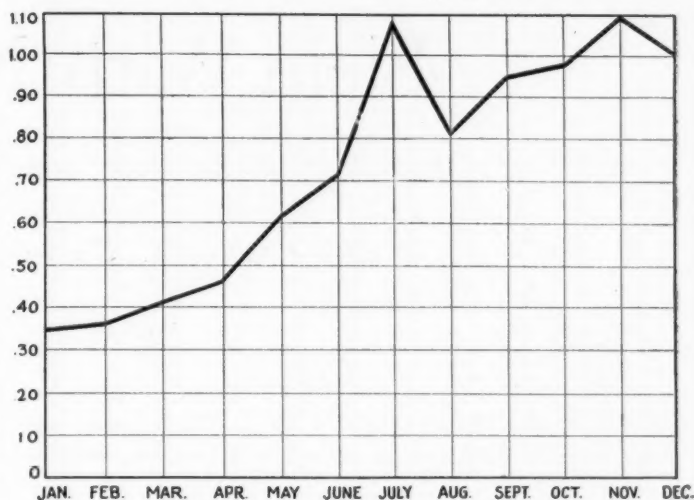
These figures are compiled on the assumption that one acre will yield 350 lb. of rubber per year and that all of this American controlled acreage will be yielding at that rate by 1930. It isn't likely that either of these assumptions are correct, but they are made to present the most favorable aspect of the case possible.

Even accepting this favorable assumption, it would mean that American controlled acreage would be capable of supplying a little less than 6 per cent of the 504,000 tons which America will consume in 1930; if less favorable assumptions were made that percentage would be lower.

#### Prospects Not Bright

The prospects for breaking the foreign monopoly through American control of rubber producing facilities, consequently, doesn't seem very bright, unless American money, somehow or other, should gain control of some of those areas already in production and now controlled by foreign interests. Suggestions along this line were not wanting several years ago, when the foreign producers were nearly bankrupt and when rubber was being bought for less than the cost of production. Accomplishment of such a project would have been far easier then, of course, than at present.

#### Wholesale Crude Rubber Price at New York Month by Month—1925



The recent increase in percentage of production released under the Stevenson plan to 100 per cent cannot be taken too optimistically. This means release of 100 per cent of an assessed standard production—not 100 per cent of the real potential production.

If all restrictions on production were taken off and rubber output pushed as hard as possible, there probably would be no shortage at present, nor during 1926. P. L. Palmerton, chief, Rubber division, Bureau of Foreign and Domestic Commerce, estimates that 626,000 tons of rubber could be produced in 1926, if restrictions were lifted. With a probable world consumption of about 575,000 tons in 1926, this means that there is no reason to fear an actual physical shortage of rubber during 1926. Whatever shortage occurs during that period can be accepted as artificial.

#### Should Encourage Planting

The likelihood of a true shortage in the future, however, makes favorable the idea of development of new rubber growing areas under American control. Despite the fact that it takes seven to nine years to get a plantation into profitable production, the probability of a continued demand which is larger than the available supply should lend confidence to those contemplating investment in such projects.

The general controversy, involving political as well as business aspects, between British and American representatives is being well aired in the daily press. To go into details here would be superfluous. That the British have a side in the case, however, should be recognized.

Summarized, the rubber situation, from the standpoint of the automotive industry looks something like this:

The possibility of breaking the foreign monopoly through American control of producing areas is not very good for the next decade at least.

Gradual increase in American owned producing areas, saving of rubber in use, utilization of substitutes, work with synthetic rubber, and all other activities tending to decrease American demand for foreign rubber should be encouraged as tending to mitigate the evils of the situation and as helping toward a final solution.

**NEXT WEEK—A complete story of the  
New York Show in *Automotive Industries***



# General Motors Enters Low-Priced Six Field With New Pontiac

*Car with 186 cu. in. motor and 110 in. wheelbase will be offered in coach and coupe types. Fisher bodies, Duco finish among features. Two-wheel brakes. Price \$825.*

By Walter L. Carver

WITH the opening of the New York Show, the Pontiac Six, the latest addition to the General Motors line, will make its first public appearance. Two body types, a five-passenger coach and a two-passenger coupe, which comprise the entire line, will be shown. As compared with other six cylinder units of the General Motors family, the prices are low, both the coach and coupe listing at the one price of \$825.

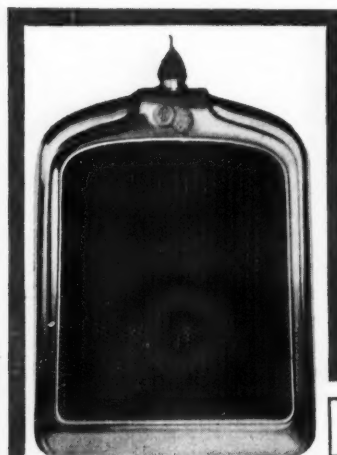
Distribution of the new car will be through the Oakland organization exclusively, and the Oakland plant has been remodeled to some extent so the two lines are produced side by side without interference. Facilities have been provided which permit of a production of 60,000 cars during the current year, but this schedule is tentative only. The six-cylinder engine has a bore of  $3\frac{1}{4}$  in. and a stroke of  $3\frac{3}{4}$  in. Designed for moderate speed operation, the power

curve peaks at about 40 hp. at 2400 r.p.m. The wheelbase is 110 in. and allows liberal body space on the chassis, which is conventional in every respect with a kick-up over the rear axle. Bodies are built by Fisher and include such characteristic features as the V-V windshield, automatic windshield wiper and rear view mirror.

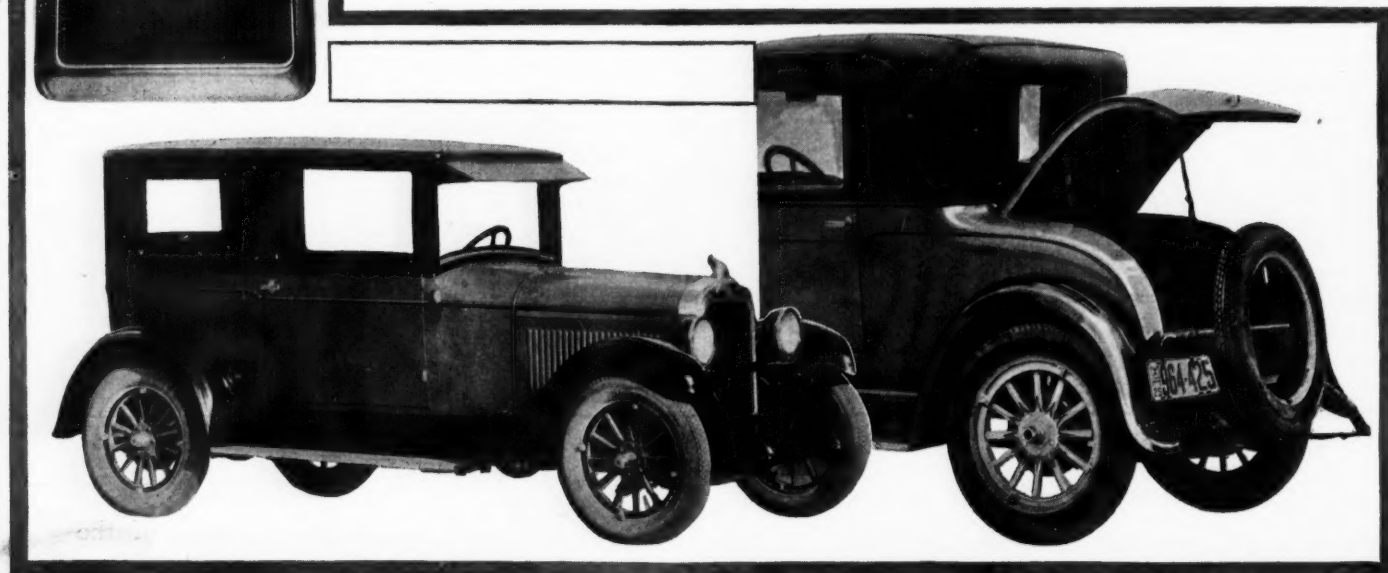
Duco finish is standard on both bodies. Each has the upper portion finished in black, while the body of the coach is Arizona gray, with red striping, and that of the coupe is light sage green, with similar striping. Fenders, mud guards, etc., are the usual black baked enamel. Double belt molding with the lower strip extending forward to the radiator is used on both bodies. The lower strip is raised slightly just back of the door openings to produce a characteristic appearance. Rear quarters on the coupe are finished in leather and fitted with top bows.

Interior finish in the coach is gray corduroy, while this material and leather are optional in the coupe. In the coach, both front seats tilt forward, and the rear seat has full three-passenger capacity. The coupe is fitted with a wide shelf for parcels at the back of the single seat, while the rear deck is closed by a large hinged door.

A dome light is fitted in the coach, while the ammeter, speedometer and oil gage are grouped under a single rectangular glass panel at the middle of the instrument board with indirect lighting. A Remy combination light and ignition switch is placed to the left of the instrument panel, and a circular plate carrying the choke and manual throttle control buttons is symmetrical at the right side.



*Left: Pontiac radiator, showing the Indian head emblem. Below: The coach and the rear of the coupe, showing how the cover of the latter's rear deck lifts to admit bulky packages. The cover can be taken off entirely if desired.*



As ignition control is full automatic, no manual control is required. The horn button is located at the head of the steering column, while the pedal, hand lever and accelerator layout is conventional.

A narrow, relatively flat panel forms the center portion of the hood, and blends into the cowl at the rear end. The balance of the surface over the top of the hood is a long "radius" which terminates in shorter "radii" at the junctions with the sides. The radiator is nickel finish and is embossed to conform to the contour of the hood. A panel at the center top carries a double medallion similar to that used in the advance advertising of the car. An Indian head is mounted on the radiator cap. One-piece double-crowned fenders and 12-spoke artillery wheels carrying 29 x 4.75 in. tires complete the features that make the appearance of the car.

Aside from the ratio of stroke to bore, which is somewhat unusual, the general make-up of the engine is fairly conventional. With a bore of  $3\frac{1}{4}$  in. and a stroke of  $3\frac{3}{4}$  in. and six cylinders, the displacement is 186 cu. in. and the compression ratio is 4.6 to 1. Rigidity of structure is secured by splitting the crankcase  $2\frac{5}{8}$  in. below the centerline of the crankshaft and casting the cylinders and upper half of the case as a single unit. A pressed steel pan, which includes a false bottom equipped with screens and welded-in baffles, completes the lower portion of the engine.

Three main bearings of the fully interchangeable bronze-back, babbitt-lined type support the crankshaft, which is forged with heavy inherently balanced cheeks. Sizes of the main and lower rod bearings are as follows:

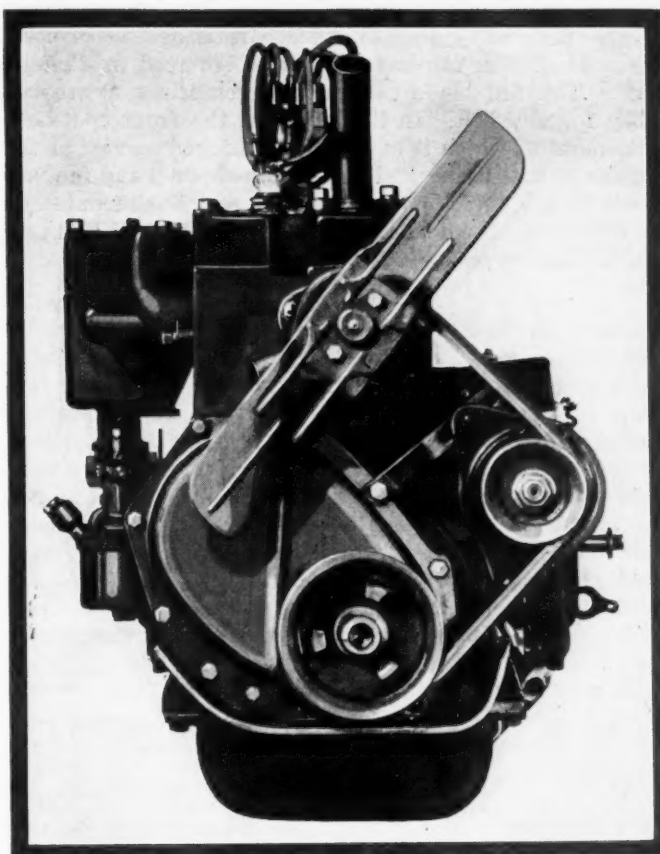
Bearings	Dia., in.	Length, in.
Front Main	1 15/16	1 5/8
Center Main	2	2
Rear Main	2 1/16	2
Lower Rod	2	1 9/16

Three-quarter inch holes are drilled in the crankpins, and their ends are plugged. These communicate through smaller drilled holes with the main bearings and with the rod bearings. All bearings on the crankshaft are pressure lubricated from a large gear pump which is mounted in the pan and driven by a vertical shaft and a pair of helical gears at the center camshaft bearing. A copper tube manifold connects to the three main bearings, and the conventional drilled crankshaft completes the line. Connecting rod bushings are grooved, and the supply is regulated by the small holes in the crankpins. However, the pump is unusually large and insures a liberal supply at all speeds.

The connecting rods are steel drop forgings with two bolt caps, the lower bearing being babbitted on a tin bond. The I-section shank is flared at the lower end to provide a rigid backing for the crankpin bearing. The center-to-center length of the rods is  $7\frac{5}{16}$  in. and the upper end is enlarged to carry a bronze bushing of  $1\frac{1}{16}$  in. inside diameter and  $1\frac{9}{16}$  in. length. Oil holes are drilled in the sides of the upper bearing and oil which creeps up the shank of the rod lubricates the bearing.

Piston pins, being of  $1\frac{1}{16}$  in. diameter are unusually large. A set screw with a slotted head and a dog point retains each piston pin in the cast iron bearings of the piston. Two rings of  $\frac{3}{16}$  in. width are located near the top of the piston, and a third or scraper ring located near the bottom of the skirt. The pistons are of plain cylindrical form with surface relief at the pin ends. The length of the piston is 4 in. and the pin center is  $1\frac{13}{16}$  in. above the lower end.

The drive from the crankshaft to the camshaft is by a Morse silent chain of  $\frac{1}{2}$  in. pitch and  $1\frac{1}{4}$  in. width, with sprockets of 17 and 34 teeth, respectively. The design



Front view of Pontiac engine showing two-blade fan and triangular belt drive

of the camshaft is purely conventional, its barrel diameter being  $1\frac{1}{8}$  in. Bearings for the camshaft are reamed directly in the crankcase and their sizes are as follows:

Bearings	Dia., in.	Length, in.
Front	1 31/32	1 1/2
Center	1 29/32	1 1/8
Rear	1 5/8	1 5/16

(exclusive of helical gears)

These bearings, with the tappet assemblies and cylinder walls, are lubricated by the spray from the crankshaft. The valve timing is approximately conventional.

Tappets are of two-piece construction, having chilled iron heads welded to light steel shanks, with the usual adjusting screw and lock nut at the upper end. Six tappets are carried in each of two brackets which are pulled against right-angled machine seats by bolts placed at a slight angle from the horizontal.

#### Valve Diameter $1\frac{3}{16}$ in.

The valves have a clear diameter of  $1\frac{3}{16}$  in. Silicon-chromium alloy is used for the exhaust valve, while the intake valve is nickel steel. The valve lift is 0.290 in. The combustion space, which is cast in the triple cylinder heads, is concentrated over the valves and domed to produce turbulence. Two identical cylinder heads, each covering three cylinders, are bolted to the cylinder block. A tubular water outlet manifold with welded-on steel flanges connects the cylinder heads with the upper tank of the Harrison radiator. The ends of the cylinder heads are so formed that the Remy full automatic distributor head can be mounted on the upper surface of the block. This unit is driven through a vertical shaft which engages with the oil pump shaft and passes through the block.

A 3-in. centrifugal pump impeller is mounted at the rear end of the fan shaft and rotates in a pocket in the front end of the water jacket which extends down to the lower



limit of travel of the piston head. Liberal water space extends clear around all cylinder barrels and valve passages. The 15-in. fan has two blades stamped in a single piece. The fan blade carrier also comprises a grooved pulley for a V belt. In the layout at the front end, both the generator, which is mounted in a hinged carrier at the left side of the engine, and the combined pump and fan, are driven by a V belt from a cast pulley which is mounted on the front end of the crankshaft. Adjustment of belt tension is made by swinging the generator outward.

#### Two-Piece Manifold

A 3/16 in. steel plate closes the front end of the crankcase and is flanged at the lower edge to produce a ledge which serves as the front engine support. The chain layout is enclosed by a stamped steel cover. Both front and rear ends of the crankcase are closed below the center of the crankshaft by extensions on the bearing caps. At the right side of the engine a two-piece manifold is clamped against the block. Although the exhaust and intake manifolds are separate castings, they are bolted together at a heating chamber at the carburetor riser. An adjustable by-pass valve near the rear of the exhaust valve controls the heat supply for winter and summer driving conditions. The intake manifold has three outlet ports which are set at sharp angles to insure equal distribution to all cylinders. A Carter 1-in. vertical carburetor is supplied by a vacuum tank on the dash, which in turn draws from a 12-gal. tank at the rear of the chassis.

Like the generator and distributor head, the starting motor is made by Remy. This unit is mounted at the left rear of the engine on the front of the upper half of the cast bell housing which is bolted to the rear end of the crankcase. Bendix drive is used for the starting pinion. The lower half of the bell housing is a steel stamping. Four bolt flange mounting is used for the flywheel and a

bronze bushing pilots the front end of the clutch shaft.

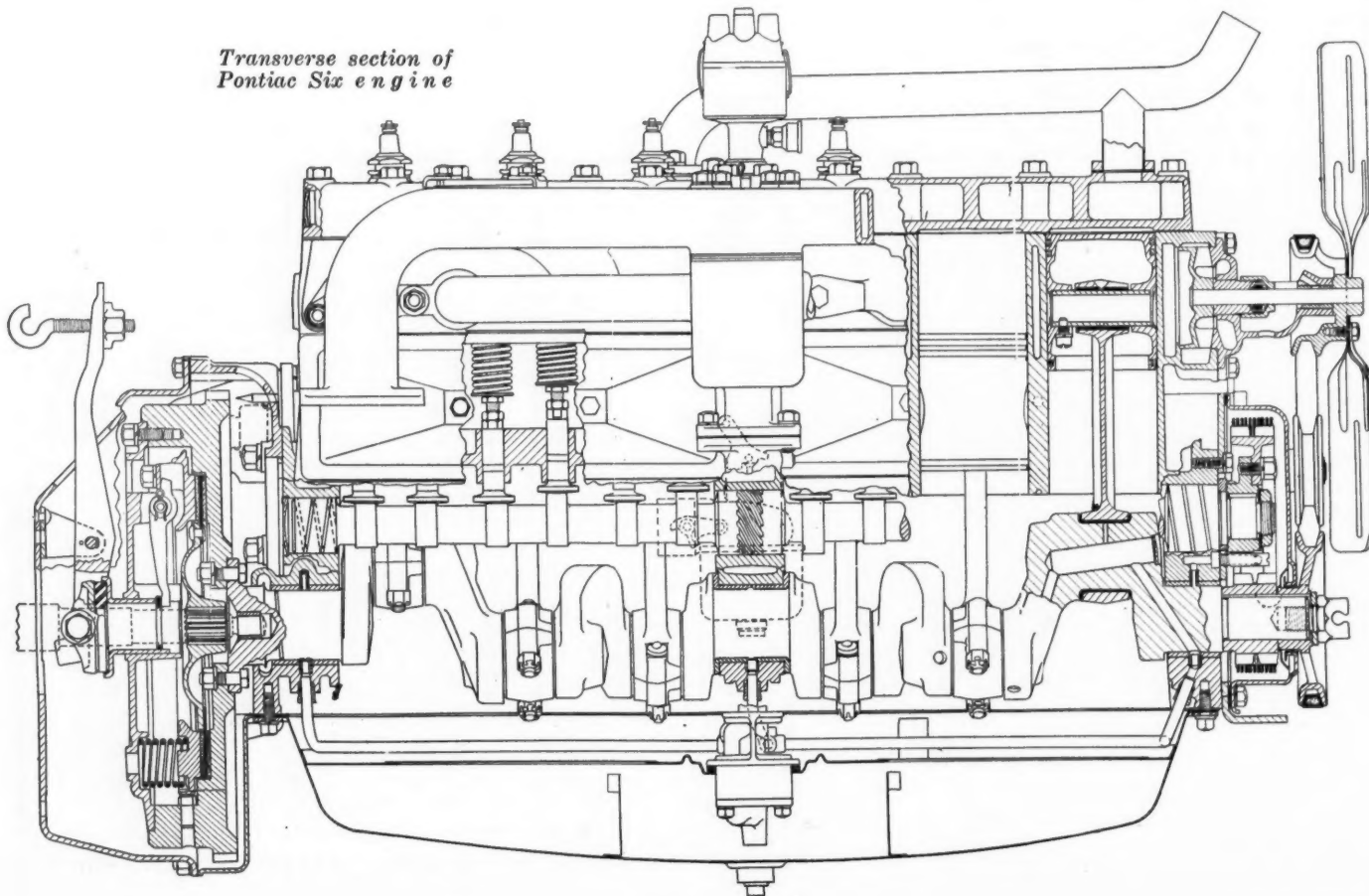
Eight springs are used in the single plate 9-in. clutch. Instead of a full disk, four segmental sections to which similar shaped sections of friction lining are riveted, form the driven member of the clutch. The segments are riveted to a light forged carrier which drives the clutch shaft through a ten splined slip joint. No adjustment is provided at any point in the clutch assembly, as all surfaces in the throw-out mechanism are arranged to oppose each other, and therefore equalize. Three levers transmit the pressure from the throw-out ring to the clamping disks, although the drive is taken by the eight springs which press directly against the clamping plate. A graphite bronze shoe eliminates any necessity of external lubrication for the clutch throw-out.

A pressed steel cover completes the flywheel enclosure and carries the gear box which is altogether conventional in interior design. Three forward speeds and reverse are controlled by a ball mounted lever which is carried in the gear box cover. The hand brake lever and its ratchet also are mounted on the cover. Single row annular ball bearings carry the upper shaft assembly, while the pilot bearing and the bushings for the lower shaft assembly are phosphor bronze. The speedometer take-off and universal joint are enclosed by a cast cover at the rear end of the gear case. This cover also is machined internally to provide the seat for the ball at the front end of the torque tube, and is closed by a formed steel ring.

#### Standard Design Rear Axle

The rear axle which is not a new design but a standard General Motors part, comprises a pressed steel banjo housing and a tapered tubular torque tube which is riveted to the differential gear carrier. Only one universal joint is used and the front end of the propeller shaft is provided with a ten splined slip joint. Two equalizing pinions are

*Transverse section of  
Pontiac Six engine*





used in the bevel gear differential and the housing also is a malleable casting.

The standard gear reduction is 4.18 to 1. This ratio in conjunction with the moderate speed characteristics of the engine allows a top speed of just over 50 m. p. hr.

Both the emergency and the service brakes are mounted on the rear axle. The service brakes are operated through an equalizer bar and operating shafts, the latter being carried on the rear axle housing. Contracting bands of 2 in. width bear on the outside of the 11-in. pressed steel brake drums. The internal or emergency brakes are toggle-operated expanding bands of  $1\frac{1}{4}$  in. width.

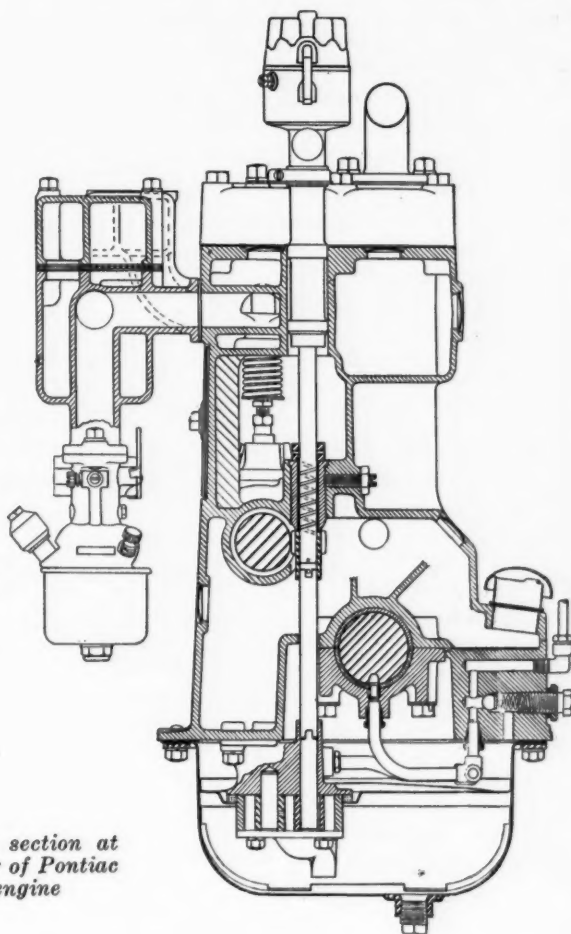
#### Springs $1\frac{3}{4}$ in. Wide

All springs are  $1\frac{3}{4}$  in. wide and are bronze bushed at the eyes. The rear springs are 54 in. long and made of chrome-vanadium steel, while the front springs are 36 in. long and made of straight carbon steel. Shackles are placed at the rear ends of all springs and those at the rear stand at a great angle when loaded normally and therefore do not transmit road shocks directly to the body.

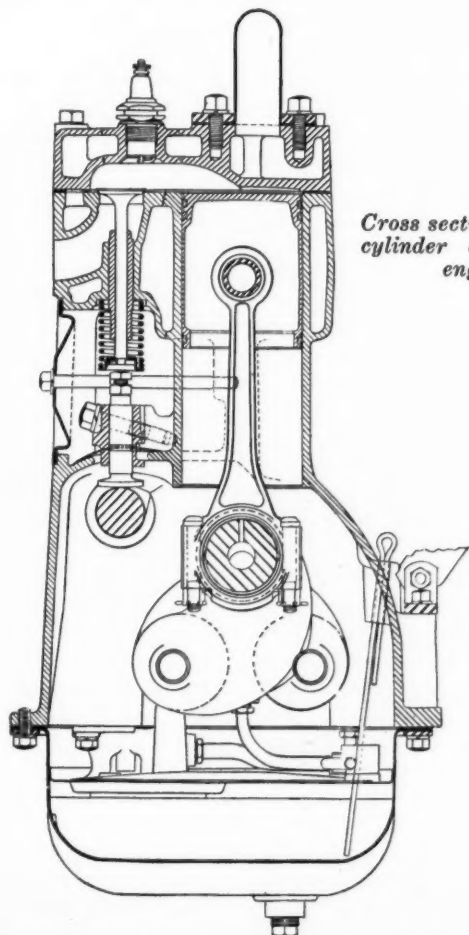
The front axle is conventional Elliott construction with parallel king-pins and a yoked cross rod, and is also a standard G. M. unit. The wheels are mounted on opposed cup and cone bearings and the wheel spindles are set at a camber of  $2\frac{1}{2}$  deg. Both the cross rod and drag link are solid instead of tubular. A worm and gear type of steering gear with a reduction ratio of 8 to 1 is fitted. The wheel is 16 in. in diameter.

Frame side channels are straight-sided in the plan view, but are assembled so that the frame width is greater at the rear than that at the front. Three cross members are used, the first being the radiator and front engine support member, the second, an inverted channel located at the front supports of the rear springs, and the third, a wide,

formed plate which is riveted into top and bottom flanges of the side rails to form an inverted saddle for the fuel tank.



Cross section at  
center of Pontiac  
engine



Cross section through  
cylinder of Pontiac  
engine

These are assisted by the rear engine support which consists of the usual bell housing and pressed steel hanger arrangement. Frame side members are  $4\frac{1}{2}$  in. deep at the middle, with  $1\frac{3}{4}$  in. flanges and  $5/32$  in. thickness.

Headlamps are mounted adjustably on the cross bar between the front fenders, while the parking lamps are placed on the cowls of the bodies. The tire carrier lays in between the rear spring horns. An AC muffler is carried in pressed steel brackets just inside of and below the right side member. The Prest-O-Lite 80 amp. hr. battery is mounted in a pressed steel carrier under the left end of the driver's seat.

Like the rest of the electric system, the horn is made by Remy. All chassis lubrication points have special fittings which permit of the use of a high pressure oil gun that forms part of the standard equipment.

**D**ER MOTORWAGEN prints an article on "Chrome-plating or Nickel-plating" by Dr. B. Mendelshon, of Berlin, in which priority of the invention of the chromium plating process is claimed for a Dr. Liebreich, whose patents are controlled by the Chrom-Gesellschaft m.b.h. of Berlin. Liebreich's patents (German patents Nos. 398,054, 406,885 and 406,666) were issued in 1922.

The same article enumerates some of the uses of the chromium plating process in the automotive industry. The Mannesmann-Mulag Works use it as a rust-proofing process on their truck chassis frames. They also apply it to some parts of the engine, and in that case the heat resistance of the chromium also plays an important part. The coating of chromium protects the spark plugs against scaling.

# Flint Announces a New "Junior Six"; Other Models Improved

New small car will be furnished in one body style, a coach, to sell for \$1085 and \$1185. Engine built by Continental is unit power-plant type of 169 cu. in. size

A NEW, smaller model has been added to the line of the Flint Motor Co. while the two models which formerly comprised the line have been given new designations. The new model is known as the Junior Six and has a rating of 40 hp. The model formerly known as the "40" is now known as the "60," and the one formerly referred to as the "55" is now the "80" series.

The new Junior Six will be put out with a coach body only, but with either standard or de luxe equipment, as the Junior Six coach and the Junior Six de luxe coach. Prices of the complete Flint line for 1926 are as follows:

Junior Six			
Coach	\$1085	Coach de luxe	1185
Flint 60			
Touring	1285	Roadster	1395
Sedan	1525	Coupe-roadster	1495
Brougham			1575
Flint 80			
Touring	1595	Sport touring	1945
Sedan	2195	7-pass. sedan	2395

The changes made in the older models are not confined to the ratings, however. The new "60" model is equipped with a seven-bearing, six-cylinder Continental engine of  $3\frac{3}{4}$  by  $4\frac{5}{8}$  in. bore and stroke, which is an increase of  $\frac{1}{8}$  in. in the bore over the previous "40." Changes which are common to both models include heavier frames, the use of conventional mufflers and the addition of an air cleaner, a Pur-O-lator, a Gas-Co-Lator and a coincidental lock. Besides, the radiator shell has been improved in design.

## Engine is Continental

The engine of the new Junior Six is also made by Continental and is of the same size ( $2\frac{3}{4}$  by  $4\frac{3}{4}$ ) as built by the same manufacturer for several other lines, including the Star Six. It differs from most other engines used in Durant lines, however, in being a unit power-plant type. This engine, which has a displacement of 169 cu. in., has an output of 40 hp. at 2,800 r.p.m. and develops its maximum torque of 105 lb.-ft. at 800 r.p.m.

The equipment that goes with this engine includes a Stewart vacuum tank, a Zenith carburetor, Auto-Lite starting, lighting and ignition units, Bendix starter drive and a USL battery. The single plate clutch is fitted with the Hoosier shock-absorbing drive, consisting of a volute spring which is under tension when the car is being driven in the forward direction. This spring drive is claimed to make the action of the car much smoother. Four sectors of friction material are applied to each side of the clutch disk.

A standard three-speed transmission is used, and there is one Spicer metal universal joint at each end of the tubular propeller shaft. Under full load the drive is approximately in a straight line. The spiral bevel gear drive of the Adams rear axle gives a reduction of 4.87 to 1. The front axle also is made by the Adams axle works, a component of the Durant organization. The steering gear is a Warner, and has a large gear ratio (9 to 1), the object being to render steering easier with balloon tires. Both sets of brakes act on rear wheel drums of 12 in. diameter, the width of the lining being 2 in.

A feature of particular interest is the adoption of rubber shock insulators on all four of the semi-elliptic springs, instead of the usual shackles. The springs are 2 in. wide, the front ones being 35 in. long and the rear ones 52 in. Chassis lubrication is by the Zerk system.

## Changes in Other Models

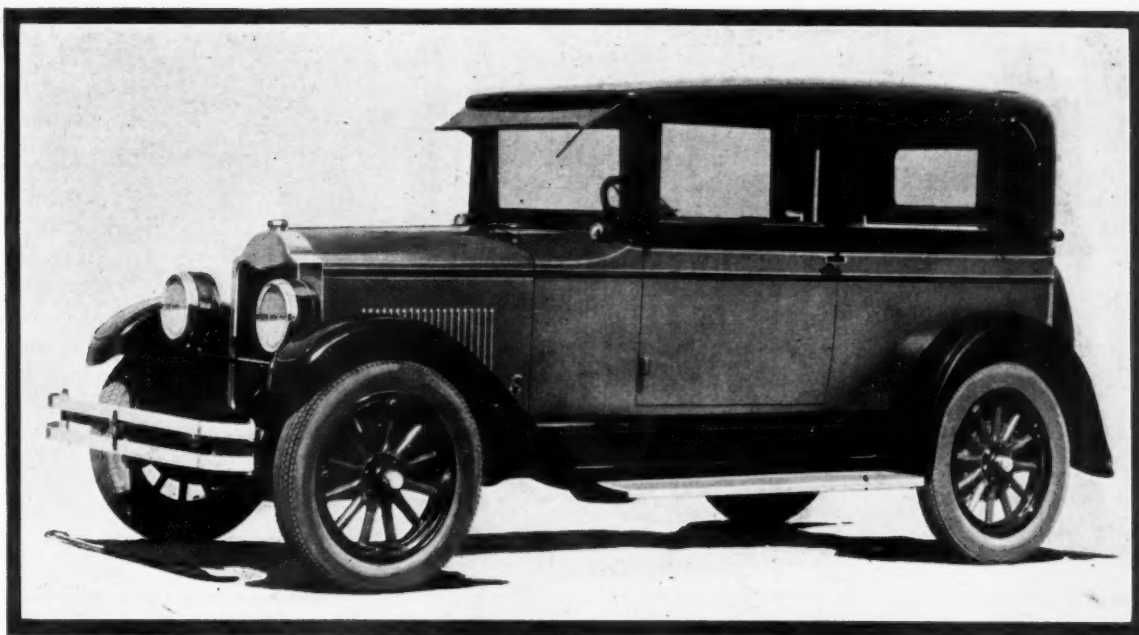
Following are some notes on detail changes made in the two earlier models, some of which changes have been referred to already. In the first place, it has been sought to improve the appearance of the cars, and to this end the radiator shells of both models are now provided with a beveled edge, where formerly there were sharp corners and recesses. Ross steering gears are now fitted, and the steering gear ratio is larger than formerly.

The light control switch and horn button now are located at the center of the steering wheel. With the exception of the switch and the Sterling electric clock, all of the instruments on the dash are grouped under a single glass panel. On the "60" model an ash tray has taken the place of the clock. The control of the windshield cleaner has been removed from the windshield to the dash, and, as already mentioned, a coincidental lock is fitted to the transmission. A  $3\frac{1}{2}$  in., welded steel tube now forms a frame torsion member, extending across from one side member to the other at the forward end of the rear springs. Graphite-impregnated throw-out bearings are now used on the clutches of both models, eliminating the need for oiling.

Although in a general way the engine of the new "80" is identical with that of the former "55," several improvements have been made in the design. Formerly only the front bearing of the camshaft was bushed, all other bearings being directly on the cast iron of the case, but now all bearings have renewable bushings. The bearing caps of the main bearings are recessed into the crankcase, so as to provide a more rigid support for the seven-bearing crankshaft. The channel sections of



The new  
Flint Junior  
Six coach,  
listing at  
\$1085 and  
\$1185



the frame side members have been increased in depth from 5½ to 7 in., the stock and flange width remaining the same. Two new seven-passenger models (touring and sedan) having been added to the line, a special chassis, 10 in. longer than the standard, is made for these bodies. The wheelbase is 130 in.

On the "60" a Continental No. 14 engine is used, which develops 56.5 hp. at 2,600 r.p.m. The crankshaft of this engine also is carried in seven bearings of 2⅜ in. diameter. Cylinders and crankcases are cast in a single block, while the cylinder head is detachable. The pump and fan are mounted on a common shaft, which is driven by a V belt from the crankshaft.

All electrical units are of Auto-Lite make, with the exception of the battery, which is an 11-plate USL. The carburetor is a 1¼ in. Stromberg, and fuel is fed from a 12-gal. tank by the Stewart vacuum feed system. In view of the increase in engine power and the resulting increased strains on the structural members, the frame is now made of heavier stock, 3/16 in. instead of 5/32.

## Motor Tax and Highway Figures

OFFICIAL figures are being brought out by the National Automobile Chamber of Commerce for use in a nation-wide newspaper campaign to combat statements and insinuations from various sources that motor vehicles do not bear their proportionate share of highway costs.

The first of a volley of printed retorts to this propaganda asks: "Who Pays for the Highways?" The answer is supplied in figures which show that motor vehicle taxes in 1924 were equal to 92 per cent of the expenditures for State and Federal highway systems which carry 80 per cent of the nation's vehicular traffic. State and Federal expenditures for roads were \$600,500,000 while motor vehicle taxes were \$551,000,000.

The State motor license fees alone were more than twice the amount required for upkeep of the State roads, the upkeep cost being \$107,000,000 and total license fees \$305,000,000.

The charge has frequently been made that the railroads are forced to pay taxes to build highways for their competitors. The N. A. C. C. statement says that this is partially true in the sense that a proportion of all

general taxes goes to highway building and accordingly some share of the general taxes paid by the railways eventually is devoted to highway construction. The share, however, is extremely small. In 1923, the latest year in which comparable figures are available, railroad taxes going ultimately to highway purposes amounted to \$34,000,000. This was 3.6 per cent of the total highway bill. That same year the freight revenues derived by the railroads from motor products totaled \$400,000,000.

There are at present five sources in the United States which are being drawn upon for the financing of road construction and maintenance: Motor vehicle taxes; bonds (a) paid for out of general funds, and (b) paid for by special motor vehicle taxes; Federal aid; property taxes; general taxes on all business. More than half of the total funds secured from these five sources comes from motor vehicle taxes.

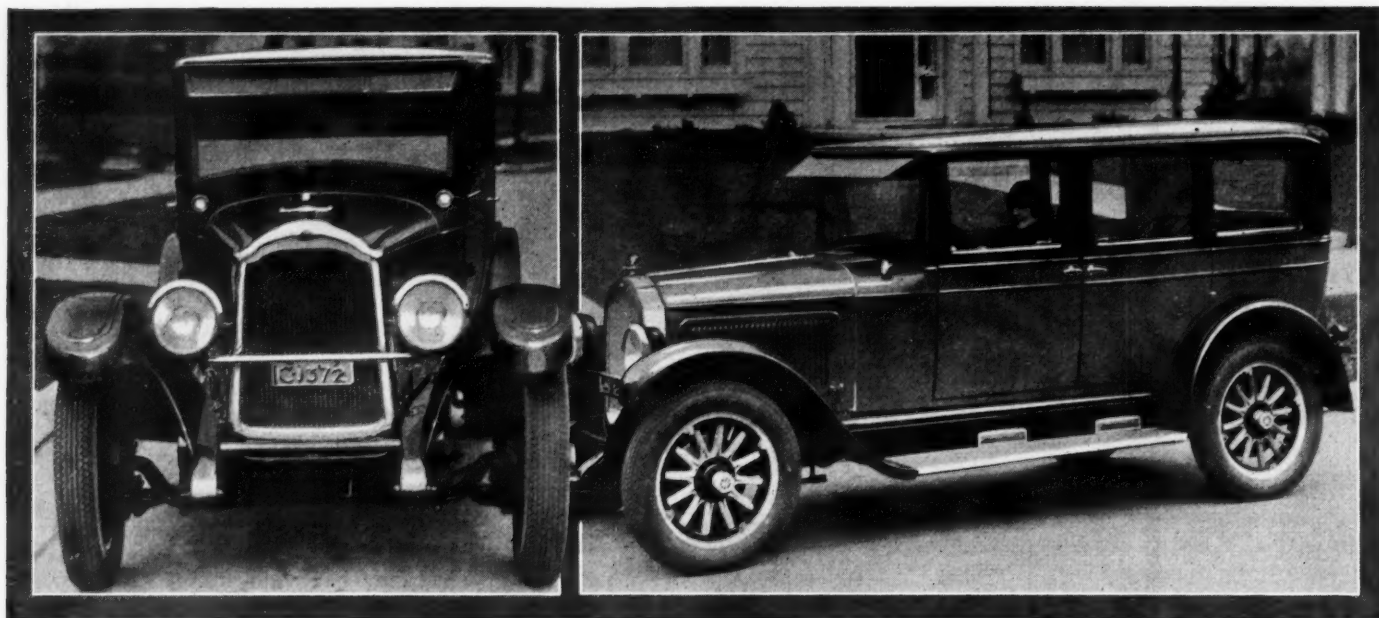
## 1925 German Registration

THE statistics of motorcycles, automobiles and motor trucks in use in Germany as of July 1, 1925, have just been made public. As compared with the same date the previous year, the number of large motorcycles above a certain piston displacement increased from 97,965 to 161,508 passengers cars increased from 132,179 to 175,665; motor trucks from 60,629 to 80,363 and special vehicles such as motor fire engines, from 2,259 to 8,290. Under the heading of passenger cars, cabs and omnibuses in public service increased from 9,333 to 14,008; government or municipally owned vehicles from 3,000 to 3,794; and cars used for professional, trade or similar work, from 119,846 to 157,863.

In the truck field the greatest proportional increase occurred in the class of light trucks, of up to 4,400 lb. weight unloaded, which class increased from 13,291 in 1924 to 26,386 in 1925. The concentration of motor vehicles naturally was greatest in the leading commercial and industrial centers. Thus in Hamburg there is one motor vehicle to every 106 heads of the population; in Berlin one to every 109; in Bremen one to every 116; in Rhenish Prussia one to every 117 and in Saxony one to every 118.

Counting only automobiles and motor trucks the total number in service in Germany increased by 35 per cent during the year.





Two views of the new Willys-Knight "70" sedan

## Smaller Willys-Knight Six to Make Debut at New York Show

New car powered with 180 cu. in. sleeve valve engine of 2-15/16 in. bore and 4 $\frac{3}{8}$  in. stroke. Has a seven-bearing crankshaft, single dry plate clutch and air cleaner. Prices not yet given.

*By Leslie S. Gillette*

**W**ILLYS-OVERLAND, INC., will introduce at the New York Show a smaller Willys-Knight six as a companion to the "66" sleeve valve six model which was brought out just a year ago. The new six is expected to prove a popular addition to the company's already extensive line of Overlands and Willys-Knights.

Both the four and six-cylinder Overlands will appear at the show without any important mechanical changes, and except for the addition of a touring car on the six chassis the line-up of the bodies will be the same as before.

Prices on the new car will not be announced until the New York Show but it is understood they will be considerably lower than those on the present Knight six.

Two body styles, a sedan and touring, will be offered on the new Knight-engined chassis—known as the "70"—which follows closely the general design of the larger six model and incorporates such features as mechanical four-wheel brakes, air cleaner, and a seven bearing crankshaft. The radiator design of the larger six is retained on the lighter model, while the bodies have the same characteristic lines and employ the double belt beading, although they have a lower and more rakish appearance. Wheelbase for both body models is 113 $\frac{1}{4}$  in. and the six-ply balloon tires are 30 by 5.25 in.

That the engine of the new car represents an advance in sleeve valve design is apparent when the bore and stroke of 2 15/16 by 4 $\frac{3}{8}$  in. is compared with the unusual road performance for a car of these dimensions. On

many of the famous test hills, the car with full load has bettered 30 m. p. h. over the top from a standing start—the maximum speed is greater than 60 m.p.h. and the rate of acceleration is above the average. While the bore is said to be the smallest in the country embodying the Knight principle, the engine is claimed to develop the highest torque per cu. in. of piston displacement of any automobile with the possible exception of one Knight-engined car in Europe.

### Smaller Edition of the "66"

In many respects the new "70" is a smaller edition of the "66" unit, the most important change between the two being in the method of manifolding. With an N. A. C. C. rating of 20.67 and a piston displacement of 180 cu. in., 53 brake hp. is obtained at 3,100 r.p.m. while the standard torque rating is 117 lb. ft. at 1,200 r.p.m.

At both front and rear the engine is secured to the frame through heavy gage steel plates forming the regular four point type of suspension. The cast iron cylinder block is separated from the aluminum crankcase, the latter being carried 2 $\frac{1}{2}$  in. below the center line of the crankshaft to provide extra stiffness. At the lowest point of the cast aluminum oil pan is placed an oil strainer which can be removed by the loosening of a single nut. The strainer is secured to a large plug which is held against a flange on the oil pan by the nut mentioned.

Cylinder heads of die cast aluminum employing six

multi-step rings are of the same general design as on the larger six, being secured to the block by studs. The combustion chamber is of the globular type, carrying a  $\frac{7}{8}$  in. spark plug in the center. Water entirely surrounds the cylinder heads, which are divided in two sections that register with openings on the inside of the water cover. The latter is of die cast aluminum held down by six nuts screwing on the central section of the cylinder heads. Cooling water enters the block through the pump located on the front of the block and leaves through an outlet between cylinders 3 and 4 on the water cover. On account of the unusually effective cooling system the engine operates on a comparatively high compression ratio and at low speeds shows no tendency to knock when laboring.

#### Seven Bronze-Back Bearings

Seven bronze-back babbitt bearings are used to carry the plain crankshaft which has a main journal diameter of  $2\frac{1}{4}$  in. Lengths of the bearings are: Front 2 in., intermediate  $2\frac{7}{16}$  in., rear  $2\frac{1}{2}$  in. In addition to being completely balanced, the bearing caps are recessed into the crankcase webs to secure utmost rigidity.

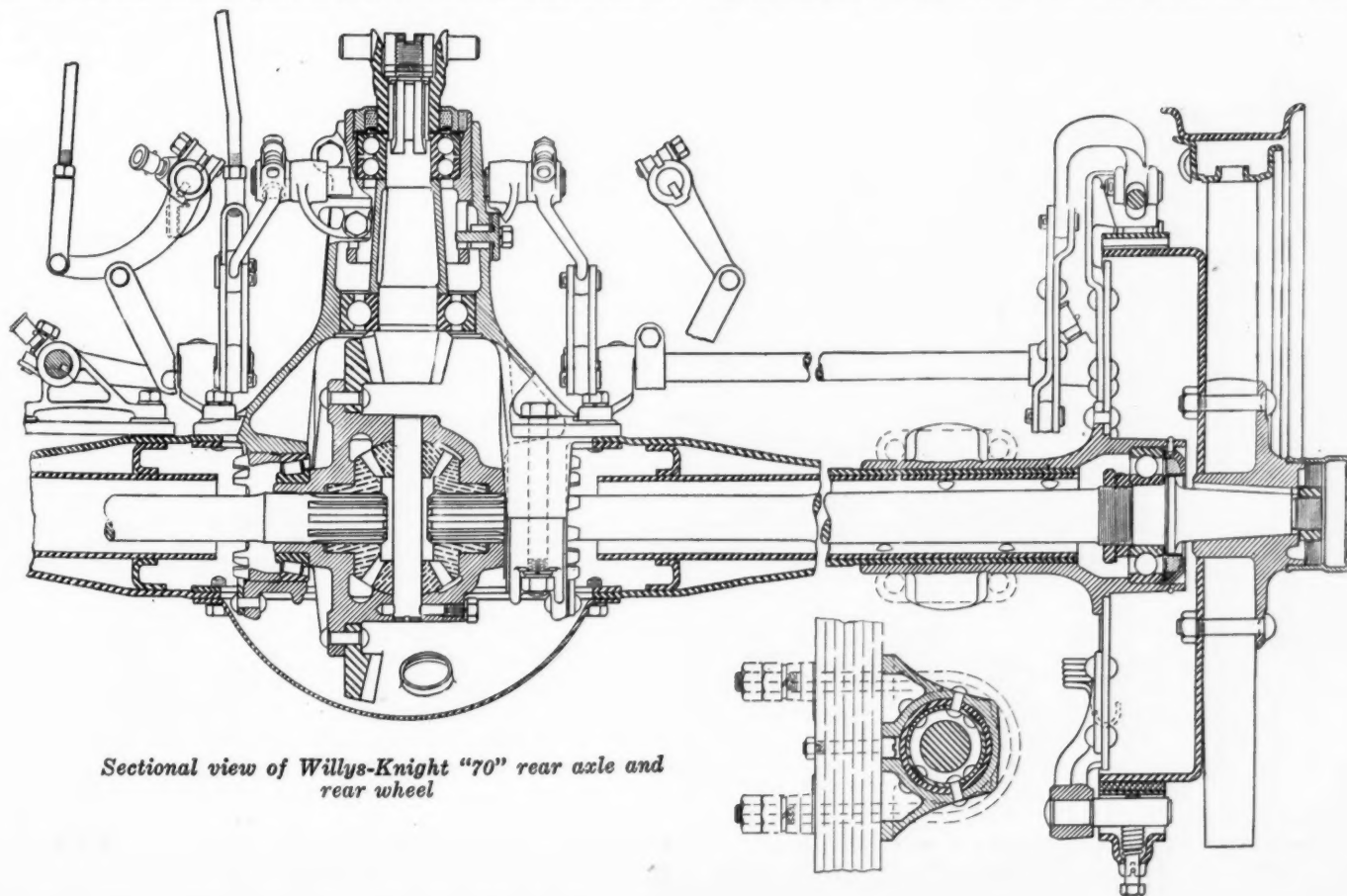
Tubular drop forged connecting rods of carbon steel with a center to center length of 10 in. are employed. They are drilled from both ends, the smaller diameter being at the lower end. The big ends, having the bearings babbitted in place, are 2 in. in diameter by  $1\frac{15}{16}$  in. long. At the upper end, the hollow piston pin of  $\frac{3}{4}$  in. diameter by  $2\frac{11}{16}$  in. length is held in the rod by a  $\frac{5}{16}$  in. bolt. Pistons are a special aluminum alloy, die cast with three  $\frac{1}{8}$  in. rings above the pin. From the pin center to the top of the head is 2 in. with the overall length  $3\frac{5}{8}$  in. The skirt is of the split type.

A Link-Belt chain of  $\frac{3}{8}$  in. pitch and  $1\frac{1}{4}$  in. wide separates the generator and eccentric shaft. An automatic spring idler is placed between the sprockets on the

crankshaft and generator to eliminate the necessity of manual adjustment to compensate for stretching. The eccentric shaft is carried in seven bearings with diameters ranging between 1.97 in. and 1.92 in., except the front bearing which is 2.18 in. diameter. Lengths are: Front  $1\frac{3}{8}$  in., center and rear  $1\frac{1}{4}$  in., and the intermediates  $\frac{3}{4}$  in. The eccentrics themselves are babbitt-lined and secured through short connecting rods to the sleeves by  $\frac{1}{2}$  in. diameter pins. Porting arrangements and areas follow closely those employed on the "66" model and it is claimed that the porting is responsible for much of the proportionately high power the engine gives. Sleeves of cast iron, ground internally and externally, are fitted to a .002 to .0025 in. clearance. Lubrication is through mist and by means of grooves and holes spaced evenly around the sleeves.

At the front end of the accessory shaft a spiral gear drives a vertical shaft which carries the ignition distributor above and the externally placed oil pump below. The latter is of special design with an internal gear meshing with a pinion mounted eccentrically in the pump housing. Oil is distributed to the main bearings by a manifold secured to the bearing caps. Through ducts drilled through the crankshaft oil is fed to the connecting rod bearings, while the timing chain sprockets are lubricated under pressure. The oil pipes drawing lubricant from the screen, and the pipe leading to the oil manifold connection from the pump, are all located externally and in accessible positions. To give lubrication in proportion to the work of the engine, the main pressure is automatically increased or lessened by a spring loaded relief valve controlled by the openings of the throttle. The eight-quart capacity of the engine is shown by an indicator on the left side of the engine.

Circulation of the cooling water is through a centrifugal water pump formed in unit with the fan and secured on the front of the block. In the outlet on the water



Sectional view of Willys-Knight "70" rear axle and rear wheel



cover is placed a thermostat control. A bracket formed with the pump cover carries the front end of the combined fan and pump shaft on a single ball bearing. At the rear the shaft is provided with a bronze packing nut. The cooling unit is driven through a "V" belt of the crankshaft, adjustment being provided for by concentric movement. The radiator is of the brass ribbon cellular type with a frontal area of 357 sq. in. Water capacity of the entire system is  $4\frac{1}{8}$  gal. By means of two triangular braces, weaving of the radiator and the subsequent movement of the hood on the cowl has been eliminated. From the center of the radiator, near the top, two stout steel rods branch out, one being secured on each side of the dash.

#### Tillotson Carburetor

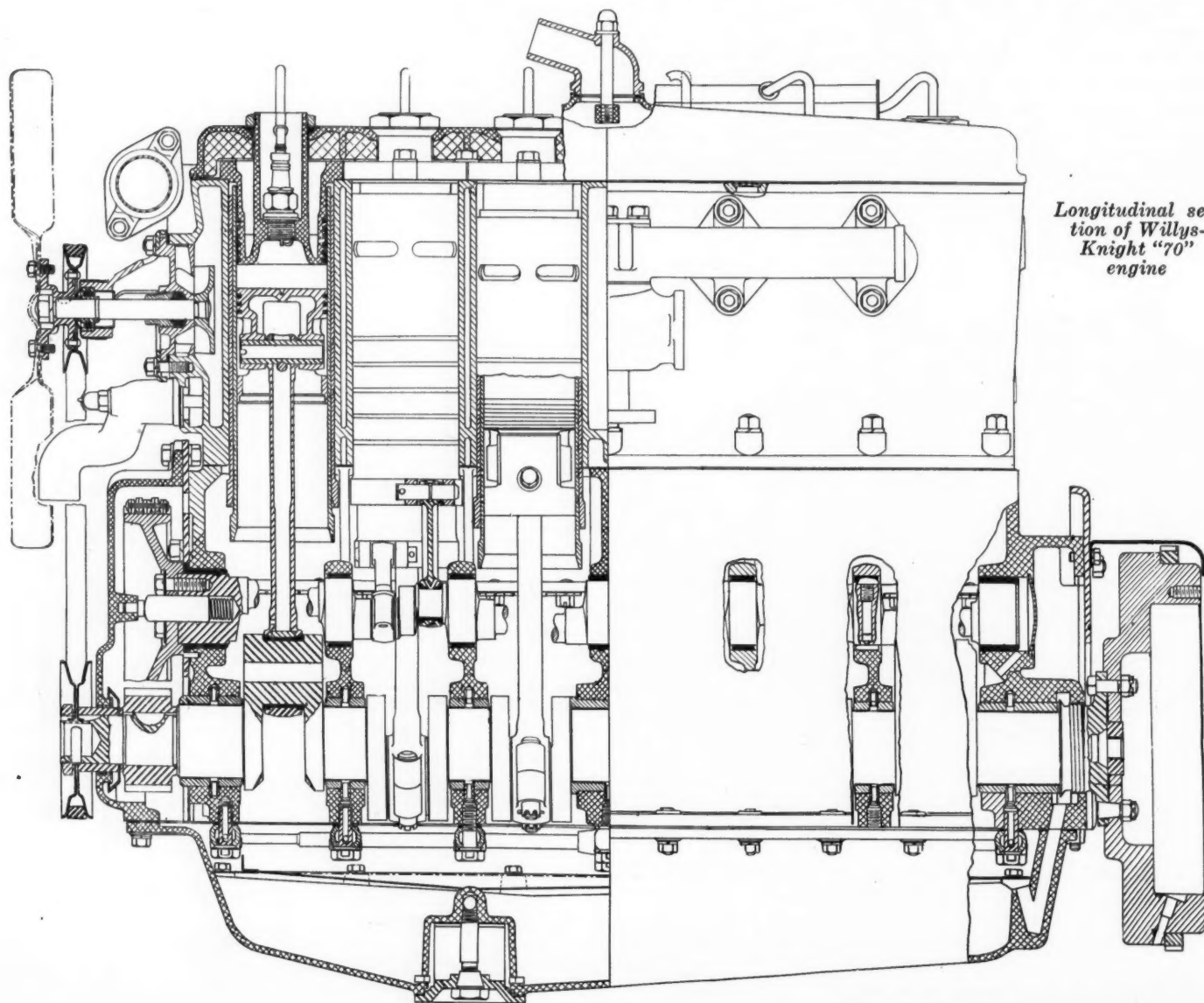
A Tillotson 1 in. carburetor of the top outlet type is attached directly to a short neck which passes through a bulbed section of the exhaust and from there on to the high turbulence, abrupt ended intake manifold. The latter is of large cross section and has its center line slightly above the centers of the valve ports, allowing a gravity flow of the mixture into the combustion chambers. An AC inertia air cleaner similar to the type just adopted on the larger six is regular equipment. From the 10 gal. tank at the rear, fuel is delivered to the carburetor by a Stewart vacuum tank. Differing from the arrangement on the larger car, the exhaust is now

carried round the front of the block and is bolted to the intake hot-spot. From the other side of the bulbed section the  $1\frac{3}{4}$  in. exhaust pipe is led direct to the large size muffler. This exhaust arrangement, besides keeping the heat away from the front floor boards, enables the interior of the cylinder block to be kept clean, as the heat for the hot-spot can be brought directly to it.

All three electrical units are of Auto-Lite manufacture. The ignition distributor is of the semi-automatic type while the generator is provided with the third brush system of regulation. The starter, which is quickly detachable, is engaged with the steel ring on the flywheel by Bendix drive. The 6-8, 15 plate, 142 amp.hr. battery is of large capacity when the size of the engine is considered. Wiring system is of the single wire type. The oil pump, distributor and generator are combined in such a manner that each unit is independent of the other and both are easily accessible for service, being placed on the forward right hand side of the engine.

A Borg & Beck single dry plate clutch and a three speed gearset are mounted as units to complete the powerplant. The clutch, mounted in the flywheel, has two moulded asbestos facings. Adjustment is provided by a movable disk inside the cover plate. The throwout bearing is of graphite.

Gears in the selective sliding transmission are of the stub form. At the pilot end of the clutch shaft plain bearings are used, while in the transmission case it is



*Longitudinal section of Willys-Knight "70" engine*



supported on a ball bearing. The six splined main shaft at the front is carried in a straight bushing and at the rear mounted on a ball bearing. Both the anti-friction bearings are of New Departure make. With the counter-shaft stationary, the cluster gears rotate on plain bushings, positive lubrication of these bearings being insured by a small scoop formed on the shaft between two gears. Gear ratios are:

Reverse	.....4.20 to 1	Second	.....1.78 to 1
Low	.....3.14 to 1	High	.....1.00 to 1

Speedometer drive is taken off immediately behind the rear bearing and a transmission lock is built into the case. On an extension of the main shaft is located a transmission brake drum which is 7 in. in diameter by  $2\frac{1}{4}$  in. wide, while the brake lever is connected with the external contracting band through a simple system of levers. With a brake lining size of  $1\frac{3}{4}$  in. wide (by  $5/16$  in. thick), the total braking area for the emergency brake is 62.1 sq. in.

Powerplant and rear axle are connected by a  $1\frac{3}{4}$  in. propeller shaft and two Mechanics metal universal joints. The rear axle of the semi-floating type employs a pressed steel banjo housing. Both gear and the pinion, integral with the shaft, are of chrome nickel steel, the latter being carried at the pinion end on a ball bearing and at the other end on a double row ball bearing. These three bearings are of New Departure make. The differential assembly is unusually simple in design and

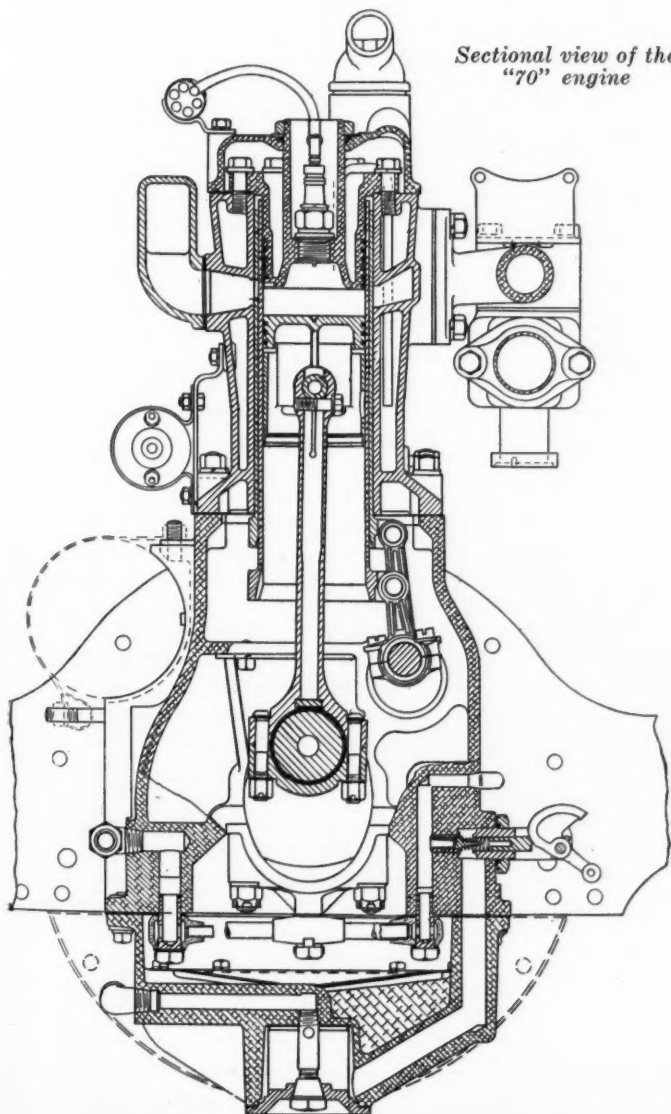
consists primarily of a one-piece malleable casting carried on two tapered roller bearings. With a nine-tooth pinion and a 46-tooth ring gear a 5.11 to 1 ratio is obtained. Axle shafts are tapered their entire length, the diameter at the wheel end being  $1\frac{1}{2}$  in. and  $1\frac{1}{4}$  in. at the splined end. Single row New Departure ball bearings are used to carry the total weight at the wheel ends. Drive is of the Hotchkiss type.

#### Eight Tapered Roller Bearings

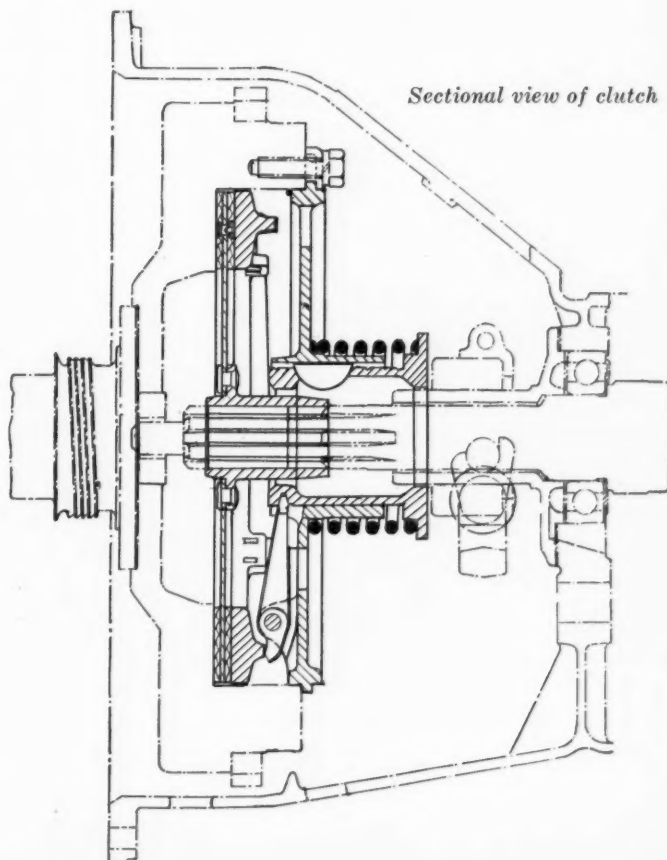
The front axle of "I" section made of chrome molybdenum steel employs a total of eight tapered roller bearings. Each steering spindle is carried in two roller bearings while the wheels each have dual bearings of the same type. The cross rod is placed to the rear of the axle beam. Steering gear is of the sector and worm type with the worm carried between radial ball thrust bearings. The bearings on the sector shaft are of hard rolled bronze. It is necessary to make two complete revolutions of the 18 in. diameter aluminum spider steering wheel to bring the front wheels from locked to locked position. Similar to the arrangement on the larger car, the horn button and auxiliary switch for operating the dim and bright lights are mounted on a bracket attached to the right side of the  $1\frac{3}{8}$  in. steering post so that these devices can be controlled without removing the right hand from the wheel. Headlights are fitted with the two filament bulbs providing high and low lighting.

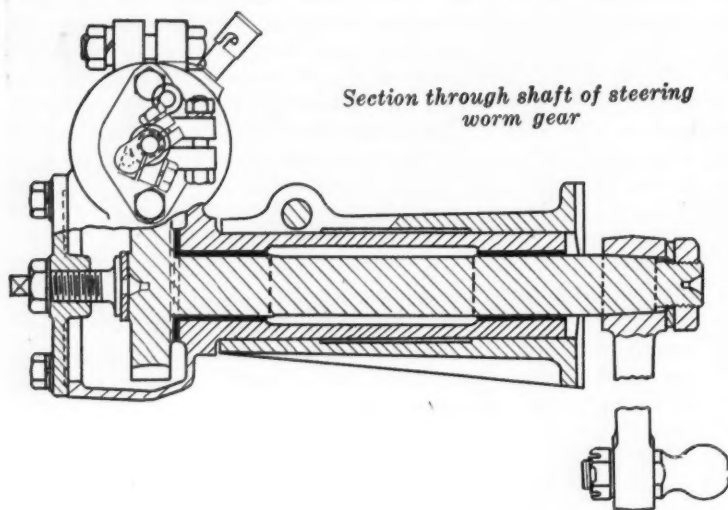
There is little difference between the braking arrangements on the "70" model and the "66." Brakes, shoes and equalizers are interchangeable on both cars while the diameters of the drums are the same. The brakes on the front wheels are of the internal expanding type with those at the rear external contracting. Inside the front wheel drums are two cast aluminum shoes anchored at the top. In the wedge shaped spaces formed by the curved ends of the shoes, operating rollers are placed.

Sectional view of the  
"70" engine

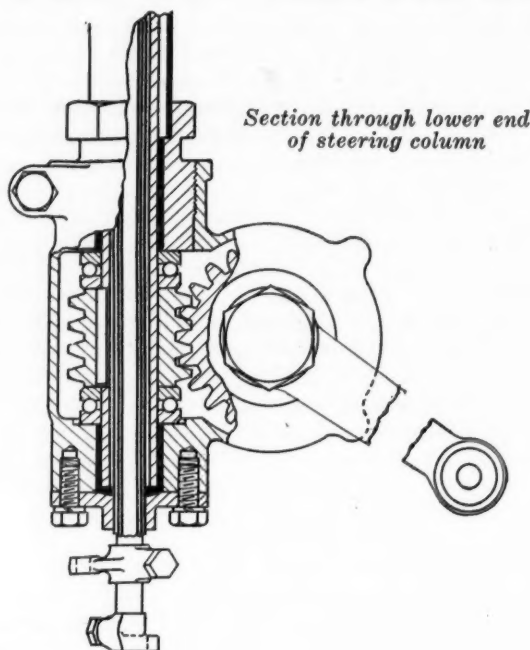


Sectional view of clutch





Section through shaft of steering worm gear



Section through lower end of steering column

When the brakes are applied, the rollers are drawn in toward the center of the axle, thus forcing the shoes outward into contact with the drums. The rollers located in the brakes proper are attached to yokes which in turn are connected by pull rods to the floating equalizer. The latter is supported on a bracket attached to the "P" beam section of the front axle. It is operated by a rod connected directly with the brake pedal. To permit universal motion of the steering and braking elements, the yokes are fitted with ball joints. At the lower end of the brake pedal is a small bell crank which has one arm connected with the front brakes and the other arm connected with the rear wheel brakes through another lever and bell crank and the customary rods. An equalizer is also mounted on the pedal so that with this arrangement the sets of brakes on the front and rear axles are equalized as well the left and right wheel brakes.

The dimensions of the brake drums are unusual for a car of this type, the size being 14 in. diameter by  $2\frac{3}{4}$  in. wide. With a brake lining width of  $1\frac{3}{4}$  in., the total braking area of the service system is 286.5 sq. in. The drums are the same size on both axles. The hand brakes on the larger car operate on the rear wheel whereas on the model "70" a transmission brake is provided.

Five cross members of large dimensions give the straight tapered frame unusual rigidity. The foremost member is of  $\frac{1}{4}$  in. stock and of the tubular type, being  $1\frac{1}{2}$  in. in diameter. Underneath the radiator is a pressed steel channel member whose maximum width is  $6\frac{5}{16}$  in. Side members of the frame are  $4\frac{1}{2}$  in. deep with a  $2\frac{1}{4}$  in. flange and formed of  $\frac{5}{32}$  in. stock. Over the rear axle there is a kick-up of  $3\frac{1}{4}$  in. Semi-elliptic springs of small camber and nearly flat under load are made of chrome vanadium steel. They are manufactured by the Mather Co., and are 2 in. wide all round, with those on the front axle  $34\frac{3}{4}$  in. long and on the rear  $52\frac{1}{2}$  in. long. Spring reaction is controlled by a complete set of Gabriel snubbers.

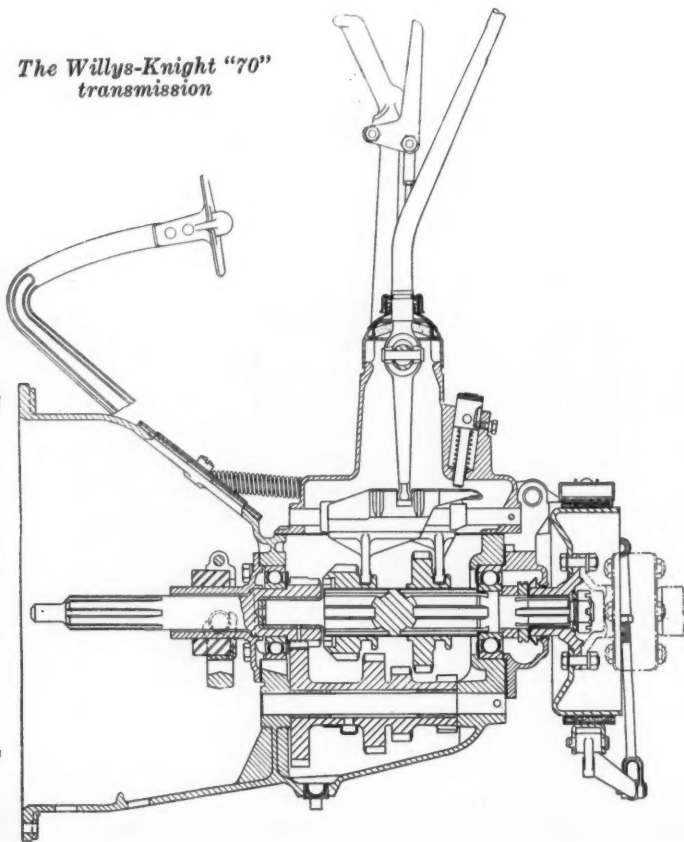
#### Road Clearance $8\frac{7}{8}$ in.

Under the rear axle there is a road clearance of  $8\frac{7}{8}$  in. with the standard 5.25 in. tire. Fisk balloon tires on straight side demountable rims are carried on 12-spoke artillery wheels. The minimum turning circle to the right is  $35\frac{1}{2}$  ft. and to the left  $43\frac{1}{2}$  ft. Lubrication of the chassis is by the Alemite pressure gun system.

Both bodies, which are of the composite type, are reinforced under the rear seat by a steel plate which runs from one body sill or side rail to the other. Conventional steel panels are employed over a wooden frame with the upper rear quarters of the sedan finished in fabric. Weight of the car ready for the road is 3,050 lb.

The closed four-door body has a double beading at the belt line and is upholstered in a special grade of "mo-velour." The open car, with a single line of beading, is upholstered in genuine leather. Exterior finish is in two-tone lacquer. The instrument board is finished in satin walnut with three oval panels containing the instruments. Standard equipment includes sun visor, dash gasoline gage, automatic windshield cleaner and rear view mirror. On the closed car there is also a smoking set, heater and dome light.

The Willys-Knight "70" transmission





# Just Among Ourselves

## Swing Low, Sweet Chariot—or High?

MADE a bet the other day with one of my fellow editors as to whether car prices were going up or down by the end of January. Don't feel as confident about my side of the bet now as I did when it was made, but at that I think I've got an even chance. If events continue as in the last few weeks, guess neither of us will win. Some have gone up and some have gone down. Tax reduction in Congress will influence toward reductions as promised, but tire price increases offset that factor. Competitive conditions probably influence for drop. Much may depend on size of January output. May result in stalemate with levels about as they are now; but changes will occur before price stability is reached . . . How's that? No, I didn't say which side of the bet I was on. By the time this reaches you the answer may be known. Dodge, Chevrolet, Gardner are down, as we write. Rickenbacker, Chandler, Cleveland are up.

\* \* \*

## Difficulties in Making Export Sales Promotion Effective

A GOOD deal of fuel for foreign furnaces probably has been provided in the last ten years by automotive booklets and sales literature which have gone into exports markets to which they weren't properly adapted. The printed word is a potent sales weapon in almost every country, but in no form of sales effort is special adaptation to local conditions more important. Forms of advertising or sales promotion which may have been highly successful either in America or in particular overseas markets may be worse than useless in others. Louis E. Van Norman, U. S. commercial attache in Bucharest, visited us the other day and told us some interesting

things about what can and what cannot be done in the way of advertising in Roumania. Billboards, he says, are prohibited by law as, incidentally, are radios. He has promised to set down details regarding sales promotion methods for Roumania in the form of an article for *Automotive Industries*. Similar information for other and more important markets should be of great value to American automotive exporters. We discovered just the other day that the Department of Commerce Specialties Division already has analyzed several important markets from that standpoint and plans to do further work along that line. The data already accumulated are worth the study of any automotive organization contemplating or engaged in foreign sales promotion or advertising activities.

\* \* \*

## British Car Makers Refuse to Get Excited

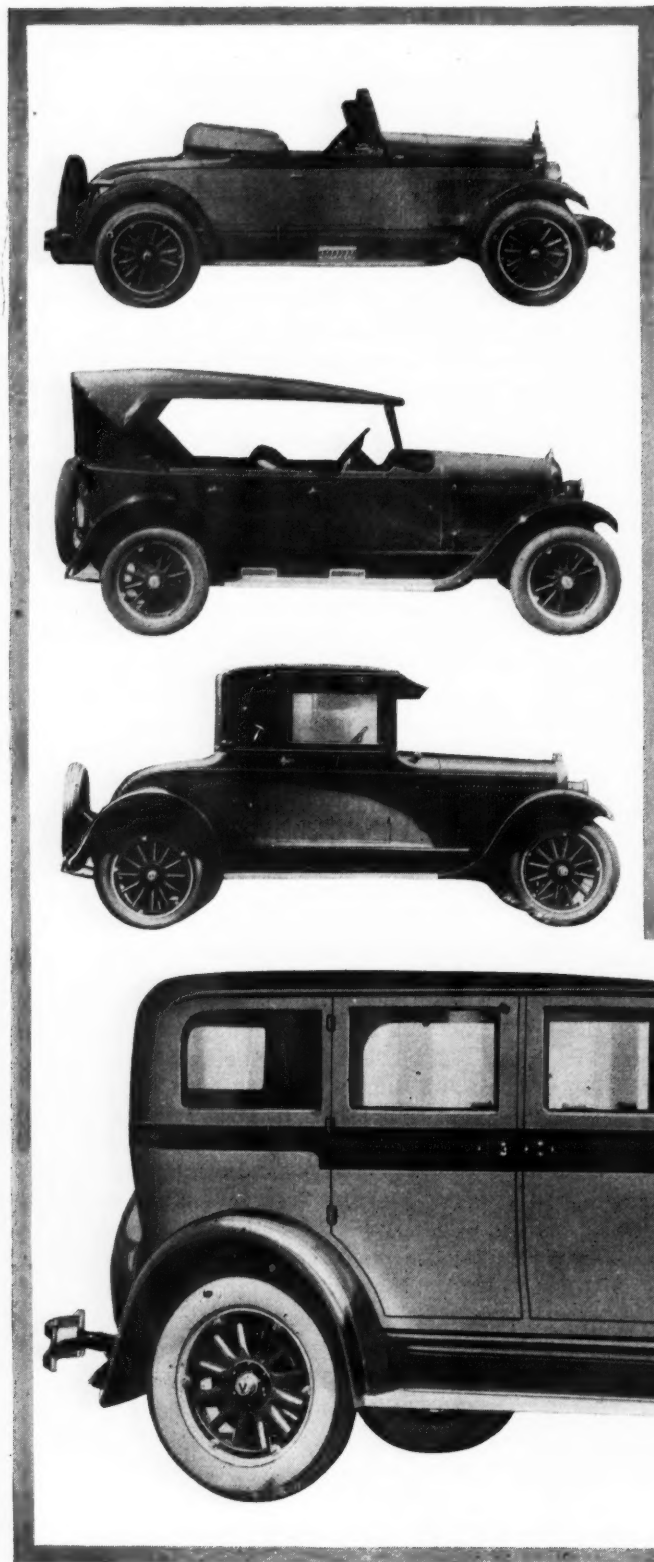
THE British motor industry hasn't gotten much excited about General Motors' purchase of Vauxhall. The authority for that statement is Edmund Dangerfield, who conducts the British *Motor*, one of the leading automobile publications of England. "Extraordinary apathy appears to exist in the motor industry," he says, "regarding the entry of the American capitalist into the field of British motor manufacture." Mr. Dangerfield seems to view this apathy with some alarm, feeling as he does that General Motors' purchase probably will not be for the good of the British industry. He thinks, however, that the British public won't take kindly to the products of this type of organization which he refers to as hybrid. Of course, if he is right in this latter contention, the British motor industry hasn't anything to worry about and is correct in its apathy.

## G. M. C.-Vauxhall Deal No Menace to English

WHILE tending to give full credit to the Americans as being "extremely clever and astute people who take their business very seriously," Mr. Dangerfield views with persistent displeasure their excursions into control of British motor companies. "One acquisition will not suffice for the Americans," he thinks, and probably with some reason. Nevertheless we can't help but feel that the fears of those Britons, whose opinions Mr. Dangerfield represents has in it much of foreboding which is unjustified. They may find themselves a few years hence in the position of the old man who said: "I've had many troubles in my life, but most of them never happened." Discussing J. D. Mooney's London speech in *Motor* of November 24, Mr. Dangerfield seems to impute to the General Motors Export chief a degree of Machiavelian finesse that hardly seems justified. Mr. Mooney, summarizing the position of General Motors, stated that "we can see in England the general elements that provide a sound basis for investment in the motor industry—high character values, the amount and character of labor needed, the fundamental production facilities and an expanding market." To be honest we can't see any very sinister meaning that might be read into that rather simple statement of fact, but Mr. Dangerfield says it impressed him very much at the time and he "found himself concentrating on it much more earnestly than on the touching allusions in the speaker's peroration to the country vicar, etc. . . ." Double meanings can be found in almost anything if one is looking for them. We can't really see much chance or desire on the part of American capitalists to gobble up the entire British motor industry.—N. G. S.

# Many New Body and Chassis

*Many changes are of minor manufacturers have some*



**V**ELIE has made several body and chassis changes which will be shown for the first time at the New York Show. Principal engine and chassis changes include a heavier crankshaft, longer piston stroke, larger connecting rods and pistons, larger valves and relocation of intake manifold and spark plugs in a more accessible position.

With piston stroke of  $4\frac{5}{8}$  in. displacement is now 221 cu. in. Increased size permits development of 58 hp. at 3000 r.p.m. The new crankshaft weighs 92 lb., the main bearings are now  $2\frac{3}{4}$  in. in diameter and connecting rods have a center to center length of 10 in. Pistons are  $3\frac{7}{8}$  in. long and are fitted with three  $\frac{1}{8}$  in. rings at the top and one  $\frac{3}{16}$  in. ring below the pin.

Inlet and exhaust valves are  $1\frac{9}{16}$  in. and  $1\frac{7}{16}$  in., respectively. Chrome nickel steel is used for the inlets and sil-chrome for the exhaust. Both inlet and exhaust manifolds have been increased in size and a  $1\frac{1}{4}$  in. carburetor substituted for the 1 in. formerly used. The combustion chamber is now located in the cylinder head instead of in the block, making it possible to place the plugs in the left side, thus increasing accessibility.

To take care of increased output the clutch shaft has been increased to  $1\frac{1}{2}$  in. diameter and the propeller shaft to  $1\frac{3}{4}$  in. The gear ratio is now 4.7 to 1 instead of the former value of 5.1 to 1. Maximum torque is 145 lb. ft. at 600 r.p.m.

The new sedan body is finished in double tone lacquer of peacock blue and breast brown black moldings and fine gray striping. Whipcord upholstery of matching color is

FROM TOP TO BOTTOM: New Oakland Sport Roadster with rumble seat and golf club compartment; New Overland Touring model; Oldsmobile two-passenger Coupe with luggage compartment in rear; Velie four-door Sedan



# Features Will *be* Seen *at* Show

*character but practically all  
thing new to unveil*

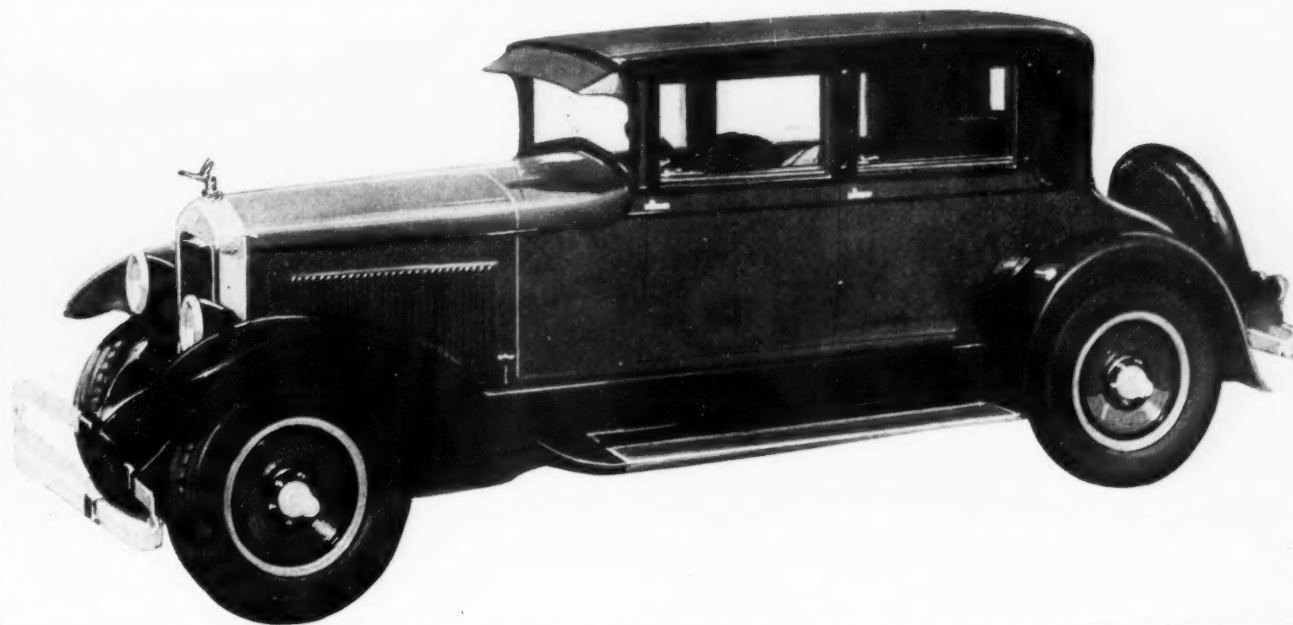
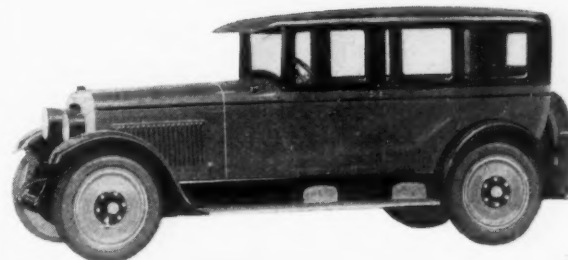
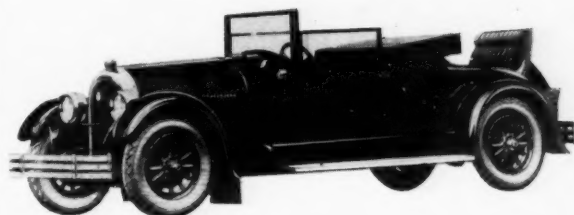
used. Glove pockets have been provided beneath the arm rests and a vanity case is concealed in the back of the front seat. Interior hardware is of Butler finish.

The new sedan windshield has a pronounced slant, said to entirely eliminate reflections and reduce wind resistance. An adjustable visor of dark colored plate glass lies close to the windshield for ordinary driving. Equipment of the sedan includes two triangular hassocks, a fatigue pillow and two ornamental rope pulls. Instrument board is walnut. Lights are controlled by a steering wheel switch.

**KISSEL.** An All-Year Coupe-Roadster reminiscent of British practice, is to be shown by Kissel at the New York Show. The top is constructed so that it has the appearance of a permanent top but it can be folded back and when enclosed in the tailored cover gives the car the appearance of a roadster. The windshield stanchions are, in this model, very similar to the pillars used on closed bodies so that the windshield is a permanent structure.

The rear deck design is similar to that of the Kissel roadster with an easily accessible auxiliary seat for two. A unique feature in American practice, although common in Europe is the construction of door windows so that they can be raised when the top is down to form effective side wind screens.

Leather or Chase Velmo is optional upholstery material. The car to be exhibited will be finished in Musketeer



FROM TOP TO BOTTOM: Kissel Coupe-Roadster with rumble seat and lowering door windows; Hupmobile seven-passenger Touring car has demountable top; Nash Sedan mounted on the Advanced Six chassis; Wills Sainte Claire four-door Sedan

## Cars Described in This Article

**A**T the New York Show will be exhibited for the first time a number of new body models as well as many cars which have had more or less extensive changes made to their engines and chassis. Details of these changes and of the new bodies are given in this article for the following makes:

Chevrolet  
Gardner  
Diana  
Moon  
Star  
Reo  
Rickenbacker  
Jordan  
Peerless  
Pierce-Arrow  
Chandler

Gray  
Velie  
Kissel  
Oldsmobile  
Overland  
Wills-Sainte Claire  
Nash  
Hupmobile  
Chrysler  
Cleveland  
Oakland

gray, vermillion stripes, black artillery type wheels and khaki colored fabric top.

**OLDSMOBILE** will exhibit two new body styles—a de luxe roadster and a coupe. The roadster has a rumble seat reached by means of a step on the rear bumper and another on the fender. The khaki top has a detachable rear panel. The coupe is two-passenger type with a large baggage compartment in the rear deck. Above the belt line it is covered with fabric and has landau bows. All Oldsmobile cars are now equipped with treadle type accelerators, adjustable steering wheels and automatic spark control.

**WILLS STE. CLAIRE.** On the present six cylinder chassis, which is continued with no important changes, Wills Sainte Claire will exhibit some new body models. The former Vogue series will be the standard line. Bodies have been lengthened three inches and the radiator has been increased in height the same amount. All corners have a larger radius. Full crowned fenders have been adopted and the top of the hood and radiator is angular instead of forming a smooth curve. Double belt moldings have been redesigned—the molding from the radiator continuing up the windshield bracket while the rear molding is placed slightly higher than that of the hood and joins it at the joint of curvature upward. Biflex bumpers, spare tire equipment and Wills radiator ornament will be included as regular equipment.

An Imco Autopulse magnetic pump is now used for fuel feed from the tank to the carburetor. The changes in the cooling system include the installation of a thermostat on the cylinder block at the water outlet and of impeller in the right front supporting leg of the engine. This impeller is mounted on the rear end of a shaft supported in a bracket on the front of the supporting leg. On the forward end of the shaft, there is a pulley which is driven by Vee belt from a pulley with movable flange adjustment on the front end of the crankshaft. A six-bladed fan has replaced the former

three-bladed cast unit. The ignition coil is now mounted on the dash and the starter is a Delco unit incorporating the new design of manually operated drive.

**NASH.** The engine of the Nash Advanced Six chassis has been increased in power by enlarging the bore to 3 7/16 in. The crankshaft is supported by seven instead of four main bearings, and a gasoline filter and an oil filter are fitted in addition to the air cleaner formerly used. On the 121 in. wheelbase chassis two new bodies will be shown. One—a four-door sedan—is finished in lilac gray with gold striping and black superstructure and running gear. Mohair upholstery and silver finished hardware are used. The new roadster on the same chassis has a rumble seat and is finished in gray-green with gold striping and black upper body and running gear. A new coupe on the Special Six chassis has deep gray-green body and wheels, black upper structure and running gear. Duo-tone green leather upholstery harmonizes with the body. A large luggage compartment accessible through a swinging door is provided under the rear deck.

**HUPMOBILE EIGHT** will have a number of changes. The wheelbase has been lengthened 6 3/4 in. to 125 in. and the engine bore has been increased 1/8 in. Larger bore has increased the brake horsepower from 60 to 67 and the compression ratio is changed from 91 to 93 lb. per sq. in.

Valve lifts have been raised from 5/16 to 11/32 in. and the inside diameter of the manifold, which is now provided with an equalizing tube, has been increased and the venturi tube of the carburetor increased 1/16 in. Spark plugs have been relocated so that they now set directly over the inlet valves.

The cooling system has been improved, especially for cold weather operation, by changing the opening of the thermostat. Delco ignition system has been adopted with Auto-Lite generator and starter.

The diameter of the Long clutch plate has been changed from 8 3/4 to 9 3/4 in. The rear axle has been strengthened. Instead of being mounted in the straddle position the pinion is now overhung. Both the ring gear and pinion are larger as are the bearings. The splined ends of the axle shaft have been enlarged while the shaft is now made of molybdenum steel.

Increasing the wheelbase has lengthened the frame to 170 3/8 in. from the former dimension of 165 1/4 in. The added space has been given almost entirely to the tonneau with the exception of a slight amount employed in moving the radiator back over the front axle. The windshield has also been moved further back to give a longer cowl effect. The appearance of the radiator has been changed by introducing a scroll effect commencing at the emblem and running to the inside edge of the shell.

Five entirely new bodies will be shown on this chassis, including two touring cars, a five and a seven-passenger, a two-passenger coupe with rumble seat, a five-passenger sedan and a berline sedan similar to the sedan except for a glass partition separating the driver's compartment.

In addition to reviving the once popular seven-passenger touring model, Hupmobile has adopted another feature of the past in that both touring cars are designed to be driven with tops down. The tops in the folded position set flush with the backs of the rear seat. A Sterling electric lock has been added to the standard sedan equipment.

**CHRYSLER** will introduce a new roadster model on the four-cylinder chassis at the New York Show. This is similar to the the 2-5 passenger body on the six chassis but seats three persons only, the rear deck being used for



a luggage compartment. The color scheme is two-tone gray with Killarney gray above the black bead and Dundee gray below. Orange striping is used on the hood louvres and below the bead while the wheels are natural wood finish. Both the windshield and top can be removed with the latter resting on nickel-plated bars when folded.

**CLEVELAND.** In both the Cleveland 31 and 43 models, the crankshafts have been made heavier at the journals and in consequence, the bronze back, babbitt lined main bearings have been enlarged. In addition, to minimize any torsional vibration tendencies, a front flywheel is now being fitted to the crankshaft.

**OKLAND** will display a new sport roadster model of the two passenger type with rumble seat accommodating two extra persons. Access to the rumble seat is by aluminum steps on the rear spring hanger and fender. The folding top rests, when folded, on bars and is quickly detachable. A small compartment for golf clubs or parcels is reached through a lock equipped door on the right side of the body.

The color scheme used is unusual. Exterior finish is two-tone Duco with the body, hood and fenders in Mt. Royal blue and El Paso tan. Red striping is used on the hood louvres and below the black belt. The fenders have a center panel of red. Gray Spanish leather is used for upholstering both seats. Equipment includes windshield wings, nickel-plated windshield posts and step plates and a wing radiator cap.

**CHEVROLET.** Chief among the changes to be found on the Chevrolets to be displayed at the Show are lighter reciprocating parts, three point suspension, improved oiling system, redesigned cylinder head and an air cleaner. By adoption of a skeleton type piston and changing the design of connecting rods the weight of reciprocating parts for each cylinder has been decreased about 8 oz.

The redesigned cylinder head provides larger cooling area around the valves with a single cover piece over the valves instead of two. Two holes are provided for lubrication. The oil pump has been placed in the crankcase where immediate priming is assured as soon as the motor is started.

Two gears instead of three now drive the front end mechanism. The generator is driven by a vee belt from the crankshaft, as are the fan and water pump. The air cleaner is attached to the carburetor intake. Tension springs have been placed at the joints of the spark and throttle controls to prevent noise from loose connections and the dash has been strengthened. Service braking area has been increased one-third and the whole braking system revised, including the use of a new type brake rod. A new five-passenger closed model with landau irons on the fabric covered rear quarter has been added to the Chevrolet line and will be known as the Landau.

**GARDNER.** Several changes have been made to the Gardner bodies, particularly to the Imperial sedan on the eight-in-line chassis. By lowering the drip molding, reducing the window depth and rounding them at the corners and lengthening the body it has been given a longer and lower appearance. Better vision has been secured by using all steel posts with a maximum width of 2½ in., thus practically eliminating blind spots.

The wider doors are equipped with distant control locks to facilitate opening and closing. Lighting control switch has been mounted on the steering column. Dash instruments, including gasoline gage and heat indicator, are

grouped under an indirectly lighted glass panel. A parking brake with its operating lever attached to the under side of the instrument board has given more room in the driving compartment by permitting the removal of the usual hand-brake lever.

A coincidental lock operating on steering wheel and ignition has been adopted as well as foot pad accelerator. The battery is located directly under the floor boards to the right of the driver's seat. The fuse box is on the steering column with all fuses numbered. New types of fan and gasoline tank filler have been adopted with new hood locks and bolts. A thermostat and gasoline strainer have been added to the eight-in-line engine.

The bore of the Gardner six engine has been increased ⅛ in. with other features similar to those used on the eight-in-line. Among the chassis changes are the adoption of Ross steering gear and Warner transmission.

**DIANA.** The Diana two-door sedan has been lengthened 9 in., the front door widened 6 in. and the rear windows lengthened to correspond with the increased body length. Because of this increased length the landau irons and leather back have been changed for a metal back. A new roof rail is slightly curved from the center forward to make it blend better with the visor.

The bottom edge of the windshield is curved to approximate the position of the molding used formerly but the molding has been eliminated and an arrow head used over the top of the cowl and hood. Moldings on the sides of the body and hood have been retained. The front pillars have been redesigned to increase driver vision, and a ventilating windshield installed. Changes in the four-door Diana sedan are similar to those made in the two-door body with the exception of length, which remains the same.

**MOON.** The new Moon models have deeper radiator shells, the fenders have a deeper crown and are one inch wider and molding has been substituted for the raised center panel formerly used. Front fenders are longer with corresponding decrease in running board length.

Moldings have been entirely eliminated on all roadster models, the body being offset at approximately the same location formerly occupied by moldings. This offset develops into an arrow over the top of the cowl and hood and is continued as a ¾ in. molding running down at the rear of the radiator.

**STAR.** A five-passenger touring model listing at \$695 has been added to the Star Six line. Collapsible top, fenders and splash guards are black, the body is French gray and the wheels are natural wood.

**GRAY.** The Gray 1926 line will consist of a single body style—a de luxe four-door sedan—which will be displayed at the Show. Compared with earlier models the chassis changes are extensive, including longer wheelbase, semi-elliptic springs with those on the front axle shackled at the forward end, mechanical four wheel brakes and an oil rectifier. The body and radiator retain characteristic Gray lines but the roof is much lower and the frame 3 in. closer to the road. Exterior finish is lacquer-torpedo boat gray with a black super-structure.

The frame has been provided with tubular front cross member and has a 3 in. kick-up over the rear axle. Steering gear is of the fore and aft design permitting strains to be transmitted to the frame side rail. By increasing the gear ratio to 7 to 1 and providing a 7 deg. slant to the king bolts, efforts needed to turn the wheels has been decreased. The diameter of the steering wheel has been

increased to 17 in. and the spark and throttle controls removed from it.

The front axle now has a heavier I-section to meet the requirements of front wheel braking torque and the fore and aft steering. The front wheel spindle is the reverse Elliott type. The four wheel brakes are arranged so that rear wheels absorb 60 per cent of the braking effort. Changes have been made on the rear axle so that the rear brakes have 12 in. diameter drums with 1½ in. wide contracting bands. This, together with front brakes, gives 117 per cent increase in braking area over the 1925 models.

Rubber blocks are now used to reduce engine vibration transmitted to the body. The crankshaft has been strengthened. The oil rectifier is mounted on the intake manifold and is automatically controlled by suction. Zerk system of chassis lubrication is standard.

**REO.** Changes on Reo models to be displayed include a hand emergency brake mounted on the left side just in front of the door which operates on a transmission drum. The usual Reo type of combined clutch and brake pedal has been retained for those who prefer it but connection to the brake can be easily broken so that the pedal controls the clutch only. Standard S. A. E. gear shift positions have been adopted.

Two filament bulbs have been adopted and improvements have been made in the hood fasteners and spare tire carrier. Chassis changes are few and include relocation of the fan, and making fan belt changes easier, improvements in the cam shaft to make valve operation quieter and redesigned tappet adjustment.

A new four door sedan model will be shown which differs from previous models in having an integral visor, lower top, 2½ in. longer hood, redesigned fenders and running boards, and relocated gasoline filling cap.

**RICKENBACKER.** Four points suspension is the principle chassis change in the Rickenbacker cars to be shown at the Show. The radiator is now mounted on top of the frame. A new body—a coupe sedan—has been added to the line and several changes made on the other bodies. On the eight cylinder bodies, full crowned fenders, longer running boards and mounting the battery box on the right running board and a matching tool box on the other side add to the appearance.

In adapting the bodies to a one-piece ventilating windshield the front cover posts have been reduced in size to eliminate blind spots. All wood has been removed from the front construction and steel substituted. This, in addition to moving the dash forward, has given more interior room. On the sedan and brougham models the roof terminates in a drawn steel plate which seals the top material against leaks. A stamped steel visor, curved to harmonize with the roof lines, is attached below this plate.

The new coupe sedan has two doors 38 in. wide which permit access to the rear seats without greatly disturbing occupants of the front folding seats. A trunk is standard equipment on this model. Fabric superstructure is provided on the brougham and coupe models while aluminum panels are used on the sedans.

Headlights are now of the twin beam type employing two filament bulbs. Standard equipment includes self-winding clock, cigar lighter, trouble lamp, dash fuel gage and heat indicator. The new radiator cap is a wing design carrying a model airplane. Hartford shock absorbers are used front and rear on eight cylinder models and on front only of sixes.

**JORDAN.** A new body known as the Victoria will supplement the Jordan displays of the Playboy roadster and the sedan on the light eight chassis. This is of the two door type seating four passengers. Exterior finish is in cactus gray with upholstery to match. All steel construction is used for this model. A seven passenger sedan will be shown on the great line eight chassis.

**OVERLAND** six models will include a five passenger touring car to be first shown at the Show. A special feature of this model is the method of carrying the side curtains in a compartment behind the front seat. Curtains open with the doors. A one-piece windshield is provided. Tentative colors are deep blue lacquer below the molding with the molding and space above finished in gray.

**PEERLESS.** Several changes have been made on the Peerless eight cylinder chassis and four new body models will be displayed. Chief among the chassis changes are 5½ in. longer wheelbase, frame channels increased in depth from 7½ to 8 1/16 in. and engine improvements which have resulted in increasing the developed horsepower from 70 to 80.

The new bodies are a roadster, five and seven-passenger sedan and a seven-passenger limousine. An integral visor has been adopted for the closed models, and other changes made so that the eights are similar in appearance to the bodies on the two six-cylinder chassis.

**PIERCE-ARROW.** Three new bodies will be introduced at the Show by Pierce-Arrow—a coach and a runabout on the light six chassis and a berline on the large six chassis. The runabout is finished in desert sand with upholstery in blue-green snake grain leather. A rumble seat is provided. The berline is finished in Bavarian blue with wheels and window moldings in Mojave gray. The upholstery is tan basket weave broadcloth in the rear compartment and matching Morocco grain leather in the front compartment. The rear seat is finished in a turkish roll. The coach to be exhibited will be finished in glossy black with vermilion wheels.

**DODGE BROTHERS, INC.,** will display at the New York Show its improved all-steel closed models finished with lacquer in colors. The improved models comprise the Type A and B sedans and the business coupe. In addition refinements have been made in the engine which give increased smoothness and quietness of operation. Among the new features of the improved bodies are wider doors, lower overall height, reduced weight, new design cowl ventilators and sun visors and narrower pillars. The Type A sedan is finished in coolie blue with turquoise striping and is upholstered in gray mohair with rear floor carpet to match. Black walnut finish instrument panel and window moldings add to the effect. The exterior color scheme of the Type B sedan is the same as on the Type A, but the upholstery is blue Spanish leather. Rear seat and back cushions are removable on both sedan models.

Dark green lacquer is used on the business coupe which is upholstered in green Spanish leather. Due to the increase in door width, the rear quarter window has been eliminated on this model.

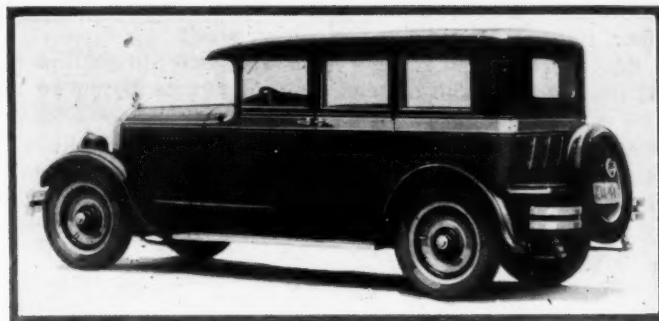
All Chandler models for 1926 will feature the "One shot" chassis lubricating system.

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**NEXT WEEK—A complete story of the New York Show in *Automotive Industries***



# New, Smaller Paige to be Built



Side view of the new Paige sedan

## in Five Body Styles

Five-passenger sedan lists at \$1495. Six-cylinder engine has bore of 3 1/2 in. and stroke of 5 in. Four-wheel brakes standard.

THE Paige-Detroit Motor Car Co. will introduce at the New York Show a smaller and lower price Paige which will be a companion car to the New-Day Jewett, announced recently. These two cars will make up the line for 1926. There have been no departures from standard practice, the new car following closely the combined designs of the larger Paige and Jewett cars.

Five body styles, including the two seven-passenger closed cars, will be offered on a 125-in. wheelbase chassis having hydraulic four-wheel brakes and 32 by 6 in. balloon tires. The three-bearing engine, of 3 1/4 by 5 in. bore and stroke, is formed in a unit with a single-plate clutch and three-speed gearset. Two metal universals and a propeller shaft connect the powerplant with the semi-floating rear axle which has a standard gear ratio for all models of 4.8 to 1.

Prices thus far announced run about \$700 lower than the prices of the corresponding models in the old line, the standard sedan listing at \$1,495, special sedan, \$1,670, and seven-passenger sedan, \$1,995. Prices of the touring model and seven-passenger limousine will be announced later.

Special features of the new line are two-filament headlight bulbs, a coincidental lock and an air cleaner.

The engine, built in the Paige shops, is an L-head six developing 63 brake hp. at 2,800 r.p.m. and has an N. A. C. C. hp. rating of 25.35. Compression ratio is 4.68 to 1. Cylinders are cast integral with the crankcase and the bore is finished by lapping. The cylinder head is removable.

Bearings of the following dimensions support the crankshaft:

	Front	Center	Rear
Diameter	... 2 25/32 in.	2 3/8 in.	2 3/8 in.
Length	... 2 11/32 in.	2 7/32 in.	2 21/32 in.

End thrust of the shaft is taken by the front bearing. Connecting rod bearings are of the bronze-back babbitt type and are 2 3/8 in. in diameter by 1 3/4 in. long. Adjustment of bearings is by brass laminated shims. By means of pins 1 in. diameter by 2 13/16 in. length, the grey iron pistons are attached to the rods. Three rings, all above the pin and 3/16 in. wide, are employed, the lowest one being of the oil control type. The pin is locked in the piston by a set screw. The piston weighs 21 oz.

Through the conventional triangular layout incorporating an automatic tightener, a Link-Belt timing chain

operates the camshaft and generator. The chain, running on S. A. E. No. 1020 steel sprockets, is 1 1/2 in. wide, 106 links long and of 3/8 in. pitch. Three bearings carry the camshaft, which has bearings of the following dimensions:

	Front	Center	Rear
Diameter	... 1 15/16 in.	1 29/32 in.	1 7/8 in.
Length	... 2 53/64 in.	2 1/2 in.	2 in.

Both sets of valves, formed with semi-steel heads and low carbon steel stems, are interchangeable. Head diameters are 1 9/16 in., and stem diameters 3/8 in.

From a gear driven pump, oil is circulated under pressure to main bearings, through drilled ducts in the shafts to the connecting rod bearings, camshaft bearings and front timing chain. To show "full" on the indicator, six quarts of oil are necessary. By means of a thermostat temperature of the cooling water is controlled. The radiator is of McCord make and of the cellular type, and the total water capacity of the system is 4 1/2 gal. The fan is driven by a flat belt 1 in. wide.

Fuel is delivered from the 17 1/2 gal. tank at the rear to the Stromberg OX-2 carburetor by a Stewart vacuum tank. An Ireland & Mathews air cleaner is attached to the air intake, while the incoming mixture is heated by a hot spot connected directly with the exhaust system. A 2-in. exhaust pipe connects to an Oldberg muffler.

The electrical equipment comprises a Remy generator starter, Atwater Kent ignition, and a Westinghouse battery. A 20 deg. automatic advance is provided in the distributor and the firing order is 1-5-3-6-2-4. Spark plugs are Champions, 7/8 in. regular. The starter engages with the flywheel gear by the usual Bendix drive.

Clutch, transmission and engine form a single unit carried in the frame at three points. The Long clutch has two driving and two driven members. The steel disks are faced with Raybestos rings of 7 3/4 in. outside diameter by 9/64 in. thick. The transmission, a Warner Gear Corp. product, provides the following gear ratios:

Low	..... 3.11 to 1	High	..... 1.00 to 1
Second	... 1.69 to 1	Reverse	... 3.78 to 1

Through two Mechanics metal universal joints and a tubular propeller shaft the power is transmitted to the semi-floating Salisbury rear axle, drive and propulsion being taken through the springs.

The housing is of the one-piece pressed steel type. The differential is of Brown-Lipe make while the axle

shafts are of chromium steel. The straddle type of mounting is adopted for the pinion shaft.

Brake drums and linings have the same dimensions on all four wheels, the diameter of the drums being 14 in. The width of the lining is 2 in. and the thickness 3/16 in. Brake application is divided equally between front and rear wheels. The emergency brake operates on an 8-in. drum behind the transmission with the lining 2 in. wide by 5/32 in. thick. Both foot and hand brakes are of the external type.

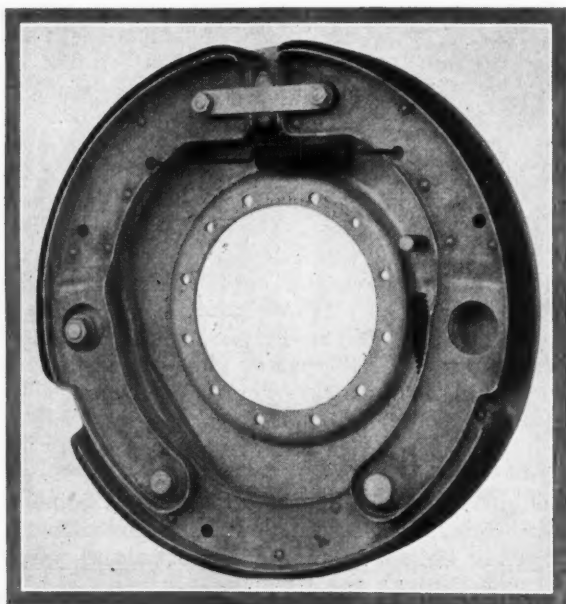
Semi-elliptic springs are attached to the straight tapered frame through 5/8 in. shackle bolts. Dimensions of the front springs are 36 in. by 6 in. and of the rear springs, 58 by 2 1/4 in. The frame is provided with one tubular cross member and four pressed members and has side channels 7 in. deep, flanges 2 in. wide of 5/32 in. stock. A Gemmer steering gear of the worm and sector type provides a reduction of 14 to 1, which allows very easy turning of the wheels when the car is at rest. Wheels made by Motor Wheel Co. are of the artillery type on the standard models and fitted with Jaxon 4 1/2 in. wide rims. Chassis lubrication is by the Zerk system.

In addition to the usual items the following are included as standard equipment: Sterling electric clock, dash gasoline gage, four Weed shock absorbers, Moto-meter, automatic windshield cleaner, rear view mirror, stop light, and heaters and bumpers on the special cars.

### Bendix Pressed Steel Shoes

**T**HE Bendix Brake Company, South Bend, Ind., is now making its Bendix-Perrot three-shoe self-energizing brakes with pressed steel shoes, as shown in the accompanying halftone cut. The photograph is of a regular production assembly, and shows not only the steel shoes but the way in which they are assembled before being shipped to the customer.

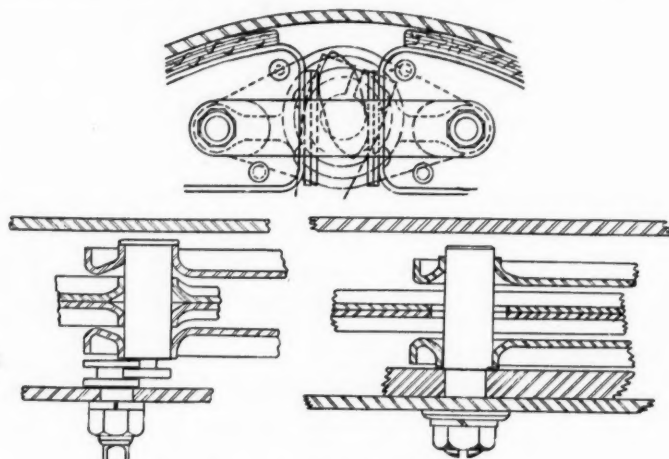
Each steel shoe is formed of two major parts. These parts are first spot-welded together in a jig for accuracy, and then riveted together for the sake of extra strength. No inserted bushings are used. In this way a light, rigid and very accurate shoe is claimed to be obtained. The assembly shown by the photograph constitutes a complete brake, ready to be mounted on the car. A preliminary



*Bendix three-shoe brake made of steel stampings*

adjustment of the brake is made before shipment, with the aid of a dummy drum.

On the customer's assembly line the brake can be installed in a very short time, and a final adjustment is then made to ensure that the brakes will function properly from the start.



*Details of Bendix steel brake shoes*

### Ternstedt Radiator Emblems

**I**N addition to its well-known line of automobile body hardware, the Ternstedt Manufacturing Co. has lately introduced a line of distinctive radiator emblems. One of the first of these adopted by a car manufacturer is the Indian head on the new Pontiac Six of the General Motors



*One of the new  
Ternstedt radiator  
emblems*

Corp. In addition to this company, a number of others will have cars at the shows equipped with emblems which are distinctive and individual. Contrary to the usual practice in the radiator emblem field, the new product will not be sold as an accessory but in each case will be developed for the car manufacturer and sold as standard equipment.

**F**ROM Dr. Ernst Valentin Verlag, Berlin-Wilmersdorf, Germany, a publishing house specializing on automobile books, we have received a copy of the Illustrated Automobile and Motor Lexicon in which automobile subjects are discussed in alphabetical order. The book is evidently intended chiefly for people newly entering the industry who do not have the necessary time to go through a regular course of study. The alphabetical arrangement makes it valuable as a work of reference but less adapted for systematic study, for, as the old lady said of the dictionary, "it is very interesting reading, the only fault to be found with it is that the subject changes too often." However, in the book under review the subjects are treated more in encyclopedia than dictionary fashion and numerous well-executed illustrations are given.



# S. A. E. Committee Recommends Seven Sizes of Batteries for Bus Work

New basis for rating also proposed. Many subjects will be covered in reports on standardization to be made at Detroit meeting. Enamel exposure tests to continue under new plan.

SEVEN sizes of storage batteries for motorcoach work are being recommended by the Storage Battery Division, Standards Committee, S. A. E., three comprising three cells each and the other four six cells each. It is also proposed that motorcoach batteries shall be rated on the basis of minimum current in amperes for 20 minutes, and minimum capacity in ampere-hours at an eight-hour rate.

A sub-division of the Electrical Equipment Division has been appointed to study the problem of special mountings for generators and starters on motor coaches, and also to look into the need for revision of the present standard mountings for passenger car and truck practice.

Exposure tests made during the past year on black baking enamels proved inconclusive. About a year ago samples of these enamels were obtained by the Standards Department from the various manufacturers, and quart samples were sent out to thirteen laboratories connected with enamel and car manufacturing plants, the identity of the samples being known only to the Department. The samples were submitted to tests, the details of which had been agreed upon by the Division. The results of all tests were submitted at a recent meeting, but they were quite inconsistent, the results obtained with the same grade of enamel varying widely, so that it was found impossible to base any definite conclusions on them. It has now been decided to make further tests, the samples being graded as of high, medium and low quality, and all being sent to one member of the sub-division for exposure. The sub-division will meet and check the results from the exposure tests at the end of 1, 3, 5, and 12 months.

## Headlight Glass Survey

A survey of practice with regard to headlight glasses brought out the fact that the present S. A. E. standard diameters are used by only 40 per cent of car manufacturers, while the standard notching dimensions are not used in full by any manufacturer. It was decided to recommend the use of a single notch at the bottom of the glass, instead of four notches on the horizontal and vertical center lines, and that the glasses be so made that they cannot be installed incorrectly.

While the specifications for upholstery leather adopted at the last annual meeting tabooed patching, as a result of presentations made by K. L. Herrmann of the Studebaker Corp. (and verified by the Committee) that patching methods have been developed, making use of pyroxylin cement, that result in patches as strong and as flexible as hide, it was decided to insert the following clause in the specifications:

"Not more than 15 per cent of the hides supplied may have up to five patches. The patches shall be equal to the rest of the hide in strength and flexibility, shall be

SUBDIVISIONS of the S. A. E. Standards Committee hold meetings throughout the year, to discuss and act on questions of standardization coming within their respective spheres and to prepare reports on their activities for the semi-annual meetings of the Standards Committee. The accompanying is a resume of the work done by these subdivisions during the past two months, most of which will be embodied in reports which will be submitted to the Standards Committee when it meets at Detroit during the latter part of this month.

invisible from the finished side and shall be water-proof. Weak or open veins and knife-cuts shall be reinforced and classed as patches."

The Engine Division has decided to adopt the same oversizes for piston rings as for pistons (0.003, 0.005, 0.010, 0.015 and 0.030 in. for car, boat and aircraft engines, and 0.010, 0.020, 0.030 and 0.040 in. for tractor, truck and industrial engines), with the exception of the 0.003 size.

In a report to be made by the Electrical Equipment Division, the radius of the holding portion of fuse clips is specified. This radius is made slightly smaller than that of the ferrule of the fuse, so as to give a four point contact. For the  $\frac{1}{4}$  in. ferrule the radius of the clip is to be  $\frac{3}{32}$  in., and for the  $\frac{13}{32}$  in. ferrule,  $\frac{5}{32}$  in. In addition, a  $\frac{3}{16}$  in. screw hole for the bottom of the clip is recommended. In view of the wide use of 32 volt systems on motor coaches, it is recommended that the voltage limit for lighting circuits be increased from 25 to 40.

As reported recently, the standard for ball handle inserts has not met with favor among users, and a review of the situation led to the conclusion that it specified numerous dimensions which it is entirely unnecessary to standardize, as the only object is to make the ball grips interchangeable on levers. It was therefore decided to limit the specifications to the diameter, pitch and length of the thread. For passenger car levers a  $\frac{3}{8}$ -24 thread is to be used, and for truck levers,  $\frac{1}{2}$ -20, both threads being  $\frac{5}{8}$  in. long.

A number of additions to the present spark plug standard are to be recommended by the Engine Division. All shells are to have a hexagon of either  $\frac{15}{16}$  in. or  $1\frac{1}{8}$  in. across the flats. The distance from the gasket seat of the plug to the end of the shell, commonly known as the

skirt length, is to be  $\frac{5}{8}$ ,  $\frac{13}{16}$  or 1 in., while the length of the thread for the  $\frac{5}{8}$  and  $\frac{13}{16}$  in. skirt lengths is to be  $\frac{3}{8}$  in. and for the 1-in. skirt length,  $\frac{23}{32}$  in. The terminal thread is to be No. 8/32 (or 0.183-32). The maximum projection of the firing points below the shell is to be  $\frac{3}{16}$  in., and the minimum distance from the spark plug seat to the nearest object over the spark plug,  $2\frac{3}{4}$  in. The aeronautic spark plug, that is, the present standard of this name is to be known hereafter as the metric-type.

#### Report on Spark Plugs

A survey of present spark plug practice made by the Division showed that 95 per cent of all makers (85 per cent of the thirty-three having the largest car production) use  $\frac{7}{8}$ -18 spark plug threads; 3 per cent (6) use the metric type and 2 per cent (9) use the pipe thread. Data were gathered also in respect to hexagon dimensions, lengths from shoulder to end of shell, terminal thread and projection of points, and the recommendations were drawn to accord best with these.

It is planned to standardize the height of motorcoach front and rear bumpers and truck front bumpers, and as preferably the bumper heights on all classes of road vehicle should be the same, a joint subdivision of the Standards Committee has been appointed to see what can be done along this line.

A Sectional Committee on Pins and Washers is being organized by the American Engineering Standards Committee, and the S. A. E. has asked the Committee that it be appointed one of the sponsor bodies, the work at

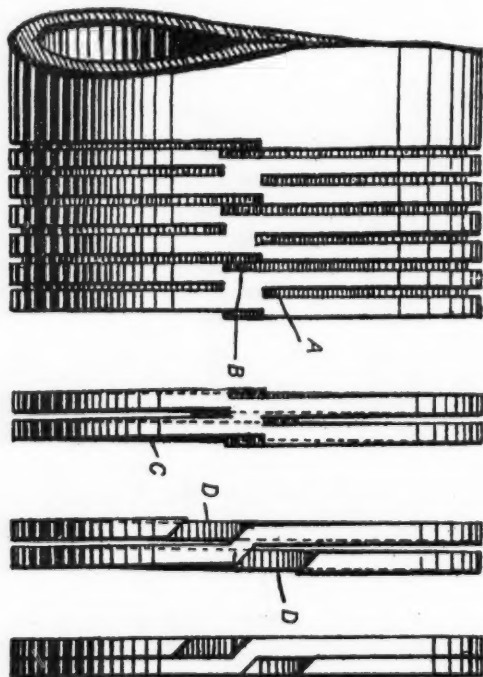
present being carried on by the American Society of Mechanical Engineers. Some material has been gathered by the S. A. E. on the use of lock washers, from which it appears that 97.5 per cent of the total number of lock washers sold, and 71 per cent of the total invoice value go into automotive products. The large discrepancy between the two figures is due to the fact that the average automotive washer costs  $\frac{1}{15}$  cent, whereas the average non-automotive lock washer costs 1 cent.

Illumination specifications for headlamps giving a depressed as well as a normal beam have been endorsed as a temporary specification.

Considerable difference has arisen over the question of standardizing rim spacings for dual pneumatic tires for motorcoaches. It has been found that coaches with such tire equipment often are "under-tired" as they leave the factory, and that it is impossible for the owners to fit them with over-size or the next size larger tire without changing the wheel equipment. The tire representatives who attended a joint meeting of the Motorcoach, Truck and Wheels and Axles Divisions were in favor of a standard rim spacing permitting of fitting over-size tires, while the vehicle builders felt that the adoption of such a standard would involve so many changes in design that it would not be worth while. Two reports were drawn up at the meeting. The majority report embodies a table of tire and rim sizes, center spacings and load capacities, the center spacings in one-half of the cases being such as to permit of fitting over-size tires. In the minority report only a fraction of the recommended combinations were included.

## Turning Double Convolution Piston Rings

A METHOD of turning double convolution piston rings, as practiced at the plant of the Clews Petersen Piston Ring and Engineering Co., West Hampstead, England, is described in *The Engineer*. Such double turn piston rings have been used in Europe for a good many years because it is believed that the construction reduces leakage at the joint.



Steps in the machining of double convolution piston rings.

The rings are cut from an ordinary pot casting, in the lathe, but instead of parting them off in the usual manner, the tool is given a slight travel, so that when the pot has made one revolution the front edge of the parting tool is opposite the rear edge of the start of the cut—as shown at A in the illustration. A relieving device then comes into operation, and the tool is withdrawn during a short part of the revolution. The groove is not cut right through the thickness of the pot, so that the ring remains attached to the casting. Another parallel groove is next cut, but the relieving gear is put out of action, and the end of the cut is made to overlap the start—as shown at B. Then, when the interior of the pot is bored out to meet the bottoms of the grooves, a series of rings, such as that shown at C, will be produced. The ring is next placed in a jig and gaps are cut in it, as indicated at D D, so that it emerges as a double coil helix with a sharp step or bridge opposite the two ends of the coil. The faces of the bridge and ends are so aligned that when they are closed together a close-fitting joint is made. The two coils of the helix are, however, open to the extent of the width of the parting tool. For this reason the two ends of the coil are threaded past the middle turn, in opposite directions, so that the helix is inverted. In this condition any sharp edge left by the parting tool can be easily removed. The ring is then pulled open axially to give it a slight permanent set, and is finally re-inverted. The set then has the effect of keeping the parted faces tight together.

NEXT WEEK—A complete story of the  
New York Show in *Automotive Industries*



# EDITORIAL

## Put the Trade Days Over!

THE need for very active cooperation from vehicle manufacturers in putting over the Trade Days this year if shows of the future are to keep up with past successes is emphasized strongly by a survey just completed by *Automotive Industries*. In response to our request for opinions about the recent N. A. C. C. resolution condemning hotel exhibits, a number of parts manufacturers—as well as car makers—wrote quite frankly.

The burden of many of the letters, detailed analysis of which is contained in an article in our last issue, was that the value of show exhibits from the standpoint of the parts maker rests largely upon the trade interest aroused. This interest has been disappointing to some in past years.

The car manufacturers have condemned hotel exhibits. The car makers need good parts and accessory representation at the national show to make these events representative of the entire industry and meeting places for the general exchange of ideas and information.

It lies largely with car executives and their sales and engineering staffs to make the trade sessions effective and successful.

By having a large factory representation at the New York Show on Monday and Tuesday mornings, January 11 and 12, this year's Trade Days can be made satisfactory to all concerned and greater success assured for that phase of future shows.

## Truck Regulation Demands

FEDERAL regulation of buses, and to some extent of trucks, is going to be urged strongly in the present Congress. The bill presented recently by Senator Cummins of Iowa, proposes that State utilities commissions or boards dealing with motor vehicles or common carriers shall be given the powers of a Federal agency to regulate interstate transportation of passengers or freight by motor vehicles. Appeals from the decisions of such boards are to be referred to the Interstate Commerce Commission.

This bill was drafted by the National Association of Railway Utility Commissioners and has the approval of the American Railway Association and the American Electric Railway Association. Bus interests, generally speaking, seem to be reasonably well satisfied with the bill, but truck interests see in it elements of danger to the best economic development of the freight carrying vehicle.

There is much to be said against any special regulation of the motor truck at this stage of its development. Efficiency and usefulness of motor trucks as transportation units depend largely upon their flexi-

bility and freedom from the physical limitations inherent in the older forms of freight transport. The exact field of usefulness of the motor truck has not yet been defined. It can be defined, from the standpoint of the best interests of the community, only by permitting it rather full economic leeway during its development period.

There is a widespread demand for truck regulation, however, particularly from railroad and electric railway interests. That demand, although persistent, is not for the best interests of either the community or the truck at the present time.

## Working with the Operators

A COMMENDABLE move for closer cooperation with truck operators to the end that their various problems may be made simpler, their costs reduced and their profits increased, has been inaugurated by the Metropolitan Section, S. A. E. At a recent meeting of this Section a resolution was passed recommending that the matter receive the consideration of the Executive Committee of the Society and thus the way was opened to give the movement a general aspect with the entire membership of the S. A. E. behind it.

Fundamentally this is a broad-gage merchandising proposition, and "good business" for the industry. To sell a truck is one thing; to keep it sold so that the purchaser comes back for another when the first wears out, or as his business expands, is something else. The surest way to keep a customer sold is to build to his requirements and to do this one must know what his requirements are. By getting closer to the truck operator, and making his problems their own, the engineers of the S. A. E. will be in a better position to meet his needs in respect to design.

Experienced truck operators can and do point out to the engineers little defects in design which add appreciably to the maintenance and operating costs of their vehicles. If the S. A. E. can work out a plan whereby it can build up strong contacts with operators in all parts of the country, and can help these operators to collect and analyze data bearing on the various phases of their business, a great light will be thrown on the business of building and running trucks, and under this light the builders and operators can gather to pick out from the assembled facts those which will ultimately give the operator greater service and economy, put the trucking business generally on a firmer basis, and broaden the builder's market.

Accomplishing this result amounts to organizing the operators and the manufacturers so that they can work together with a common object in view, as two business entities whose interests are one. The action of the Metropolitan Section is apparently a step in this direction.

# AUTOMOTIVE **NEWS SECTION** INDUSTRIES

Philadelphia, Pennsylvania

Thursday, January 7, 1926

## December Sales Above Normal; Factories Foresee Big Quarter

PHILADELPHIA, Jan. 7—Sales of automobiles, trucks, parts and accessories were slightly better in December than is usual for the time of year. Production was also on an unusually high level, and several of the large factories, upon reopening after the holidays, are speeding up output. So far as new car sales are concerned, the current quarter of the year is regarded with the utmost optimism.

With general industrial activity reaching or approaching the high point of 1925 in the closing month of that year, it is felt that the foundation has been laid for a first quarter for the automobile industry that will far exceed the corresponding period a twelvemonth ago. There is some disposition, as usual, for prospective buyers to wait for the opening of the national automobile show in New York, with its announcements of new models and price changes. Once these announcements are made there should be a spurt in business that will make itself felt throughout the industry.

### No Overstocking of Dealers

There has, as yet, apparently been no overstocking of dealers, as a consequence of the brakes applied to production in the closing weeks of the year and the generally satisfactory state of sales. The carryover into 1926, however, is larger by 100,000 to 150,000 than that of a year ago, which was unusually small.

The only really weak point that is developed by a survey of markets in key cities all over the country is the accumulation of used car stocks. Open models are proving very difficult to move, and even the closed cars are not selling as well as they ought to. But efforts now being made to curtail the liberality of time sales terms, which are having an effect in some parts of the country, should help to better the used car market.

### Sectional Reports Encouraging

Surprising unanimity is shown by the sectional reports. Even in Iowa, which has been one of the "soft spots" during recent months, there is evidence of fair business, considering the time of year. Some weakness is reported in Texas as having developed during the last two weeks of December, but this is regarded as caused by temporary conditions affecting cotton growers.

In jobbing lines, the annual inventory season has arrived, superseding holiday activity in accessories that has perhaps never before been equalled in extent.

At several of the factories, plans are under way for developing to a greater degree the regional supervision of sales, with a view to strengthening distributing

(Continued on page 30)

## Interest in Show Greater Than Ever

### Requests for Trade Day Tickets Exceed Expectations—Hotel Exhibits Fewer

NEW YORK, Jan. 7—When the 26th Annual New York Automobile Show opens at Grand Central Palace Saturday afternoon at two o'clock the public will see 52 car exhibits, eight taxicab displays and accessory and parts' showings amounting at this writing to 230. With the most successful year in the history of the automotive industry just closed, public interest in the show exceeds even that of Jubilee Year and—what is even more important—the interest of the trade itself is expected to break all records.

### Miles Plans Succeed

The luncheon some time ago at which Sam Miles, veteran show manager, enlisted the aid of the trade press in the vital necessity of increasing trade interest in the National shows has borne rich fruit. In response to pre-show publicity distributed by the trade press and to advertisements in the trade papers, more than 1000 letters have been received to date, each requesting from two to a dozen tickets of admission to the trade days, and each coming from some one active in the trade.

This indicates that attendance on Monday and Tuesday, up to one o'clock, when only bearers of trade day tickets will be admitted, will far exceed trade day attendance last year. In addition, a larger number of car company engineers and other experts qualified to discuss the exhibits from a technical standpoint will be on hand, so that representatives of the trade on their own days will have cooperation in learning what is new, and in transacting business, which, under ordinary conditions, might require weeks of time and considerable travel.

Another illustration of the change for the better in the trade's attitude toward the National shows is the fact that fewer

### CHEVROLET REDUCES CAR PRICES \$15 to \$50

DETROIT, Jan. 4—Price reductions ranging from \$15 to \$50 have been made on all passenger car models of the Chevrolet line and, in addition, the one-half ton truck chassis has been cut to \$395. The new price schedule follows:

Model	New Price	Old Price
Coupe .....	\$645	\$675
Coach .....	645	695
Sedan .....	735	775
Touring .....	510	525
Roadster .....	510	525

hotel exhibits will be held this year, and, apparently, the majority of them will be accessory to the main exhibits in the show itself.

Most of the outside exhibits will be held at the Commodore, close by the Grand Central Palace. Here, in the lobby, Auburn, Chrysler, Oakland, the Fabric Body Corp. and the Cox Corp. will show some of their wares; in the writing room, the Stutz will be on view, and Federal, Stewart, New York Wire and Spring Co., and the Staynew Filter Corp. will exhibit on the mezzanine floor. Although the Commodore exhibits this year occupy larger space than last, the number is smaller.

Franklin will show four standard and one custom-built model at the Palace, nine custom-made and standard types in Hotel Plaza Rose Room, and three standard cars in the display room of the Franklin New York Co.

The advance guard of show visitors from out of town is arriving in numbers and the large hotels are booked full, for all of show week.

## To Discuss New Cars at S.A.E. Meeting

NEW YORK, Jan. 5—New features of the cars exhibited at the New York show next week will be described by engineers of car companies at the dinner of the Metropolitan Section S.A.E. at the Hotel Commodore January 11. The speakers will be J. M. Crawford, Auburn Automobile Co.; W. R. Strickland, Cadillac Motor Car Co.; B. Read, Cleveland Automobile Co.; Joseph Rawley, Flint Motor Co.; E. S. Marks, H. H. Franklin Mfg. Co.; T. L. Cowles, Locomobile Co. of America; F. W. Slack, Peerless Motor Car Co.; C. S. Crawford, Stutz Motor Car Co.; H. C. Snow, Velie Motors Corporation.

Donald Blanchard, technical editor of Motor World Wholesale, will digest the most important new developments.



## Dodge Prices Cut From \$60 to \$205

### Graham Bros. Also Announce Reductions on Chassis and Coaches

DETROIT, Jan. 7—Price reductions announced December 15 by Dodge Bros., Inc., were made public today. They cover the entire list of Dodge Bros. cars, and range from \$205 on the Special Type A sedan to \$60 on the roadster, and \$75 on the commercial cars and chassis.

#### New Prices follow:

	New	Old
Touring .....	\$795	\$875
Roadster .....	795	855
Type B sedan .....	895	1045
Special type A sedan..	1075	1280
Business coupe .....	845	960
Panel commercial .....	885	....
Screen commercial .....	810	....
Chassis .....	730	....

Checks covering the various price reductions are being made out today by Dodge Bros. dealers. The amount which will be refunded was not estimated by the company.

New prices on special jobs of Dodge cars are as follows:

Special roadster .....	\$845
Special touring .....	845
Special coupe B .....	845
Special sedan B .....	945

Graham Bros. also reduced prices. The new schedule follows:

1-ton chassis .....	\$975
1½-ton chassis .....	1255
MBM low chassis .....	1295

Announcement says: "Even more substantial reductions are made on various other types. Motor coaches, of which Graham Bros. build a varied and attractive assortment of types, are reduced proportionately."

### Earle Gear Co. Sells Rights to Pump Patents

PHILADELPHIA, Jan. 5—Announcement is made here of the sale and transfer of all designs, patents and goodwill covering Earle Centrifugal Pumps, formerly manufactured by the Earle Gear & Machine Co., to the Aldrich Pump Co., Allentown, Pa., which company will continue the manufacture and marketing of the pumps.

### Federal Road Aid Announced

WASHINGTON, Jan. 4—Secretary of Agriculture Jardine has announced the apportionment of \$73,125,000 to the States for use in the construction of Federal-aid roads. This apportionment was authorized by the Post Office Appropriation Act of Feb. 12, 1925, and is for the fiscal year beginning July 1, 1926.

### Kenosha Brass to Move

KENOSHA, WIS., Jan. 7—Purchase of the North Building of the old Winther Motor Co. by the Kenosha Specialty

Brass Co. has been announced, and the company will move its machinery and equipment to the new location early next Spring. The building is 400 feet long and 60 feet wide, and is located on the Sheridan Road and Northwestern Railroad tracks.

### Dunlop Rubber Co. Prices Up Again

LONDON, Jan. 4—The Dunlop Rubber Co. has announced a further increase of 7½ per cent in the price of automobile tires and of 10 per cent in the price of inner tubes.

Sir George Beharrell, managing director of the company, says that prices are still far below the market prices of rubber, declaring "the total increase in tire prices as compared with October, 1924, is 49½ per cent in England, while in France the increase varies from 98 to 138 per cent, and in America the increase, excepting one size, is approximately 61 per cent."

### Automatic Screw Machine Corp. Sale Completed

FITCHBURG, MASS., Jan. 5—M. A. Coolidge, of this city, has acquired all of the real estate and personal property of what was formerly the Springfield Automatic Screw Machine Corp. The property has been in the hands of trustees for about four years.

Mr. Coolidge's new company will be known as the Fitchburg Automatic Machine Co. B. J. Macker, who was with the old company, will be in charge of the new. It is planned to carry on the business which Mr. Coolidge formerly established to manufacture automatic screw machines, as well as to continue to furnish the present users of machines with supplies and equipment.

### Wayne County Closed Car Sales 4 Times Open Ones

DETROIT, Jan. 5—Closed cars outsold open models more than four to one in Wayne county during December, 3917 closed models going to purchasers as compared with 913 open cars. Of the 913 open models, 749 were Fords.

Trucks also sold well, with Ford selling an even hundred more than half the total of 678. All makes were represented in sales, heavy-duty trucks showing surprisingly strong.

### Wisconsin Parts Adds to Plant

OSHKOSH, WIS., Jan. 7—Wisconsin Parts Co., manufacturer of Wisconsin double reduction and worm drive axles, has completed an addition to its plant. The new building, which is a modern, fire-proof, brick and steel construction, increases the company's facilities 50 per cent. New machine tool equipment expressly designed to meet its manufacturing needs is now being installed.

## Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Jan. 7—The effects of the holiday season were evident last week. Most branches of trade and industry were quiet, with operations suspended in some lines for the taking of inventories. Commodity prices in general moved upward rather sharply.

#### BASIC INDUSTRIES

Production in basic industries continued at about the same level in November as in October, according to the Federal Reserve Board. The activity of wholesale and retail trade was below the record level for October, but above that for November, 1924.

#### CAR LOADINGS

A seasonal decline in railway freight car loadings occurred during the week ended December 19. The week's total was 967,886 cars, which compares with 1,008,824 in the preceding week and 900,654 in the corresponding period of 1924. This is the first full week since July in which loadings have fallen below a million cars.

#### CHAIN STORE SALES

Chain store sales in the New York Federal Reserve district were somewhat smaller in November than in October, if allowance is made for new stores opened during the month. Preliminary reports from department stores in the metropolitan area indicate that sales last month were about 8 per cent larger than in December, 1924.

#### BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended December 30 (a holiday week) were 18.1 per cent below the total for the preceding week, but slightly above that of a year earlier.

#### FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 159.3 last week, as against 157.9 in the preceding week, and 161.3 four weeks earlier.

#### FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks increased \$250,000,000 during 1925, while cash reserves declined \$225,000,000. From a low point of \$200,000,000 in January discounts rose to \$750,000,000 by the end of the year. Open market purchases and Government securities on the other hand are held in smaller volume than a year ago. Note circulation is about \$30,000,000 smaller than at the beginning of 1925.

#### MONEY

The call loan rate was seasonally firm at 6 per cent throughout last week. Time loan and commercial paper rates were unchanged at 5 per cent and 4¼ to 4½ per cent, respectively.

# Report Good Seasonal Trade in Most Sections

(Continued from page 28)

organizations where weakness is shown, and with the further object of concentrating efforts on the territories in which the greatest field of potential new car buyers is known to exist.

Sharper attention to merchandising policies is certain to be one of the outstanding developments of the new year. A running start was obtained during 1925 with the establishment of finance plans whereby instalment selling and insurance was brought closer under factory supervision with the idea of increasing service and satisfaction for the car buyer.

Sectional reports follow:

## New England

New England dealers and distributors, particularly those in Boston, ended the year well satisfied with sales. Because the weather did not become extremely cold, except for a day or two, those organizations that kept in pursuit of business found their efforts rewarded. The used car market has shown some signs of life, but is not yet in a really healthy state. There are rather large stocks on hand and they are expected to increase as Winter progresses, with dealers hoping for a chance to unload in the Spring.

## Middle Atlantic

General agreement is expressed among the automotive centers of this territory that December business was ahead of the same month a year ago, and this condition is naturally regarded as a most happy augury for the months to come. In New York, it is even reported that December sales were slightly above November, a highly unusual state of business.

The only serious discrepancy is in the matter of the used car markets. These are reported in fairly good condition in New York, as a result of the strenuous efforts of dealers and distributors coupled with attractive selling plans, backed by guarantees. Harrisburg, Pa., reports the used car market better than the new. But elsewhere, including such important merchandising centers as Philadelphia, Syracuse, Buffalo and Baltimore, the more familiar story of increasing stocks and poor sales is heard. Complaints of the competition of new cars sold on small down payments and long terms are heard very frequently.

## Southern

December business equal to, or ahead of, any previous December is reported from all points. Difficulties previously found in getting cars to Florida have been solved, and that State is recording

sales in record-breaking proportions. Used cars have piled up there as a result of early exaggerated reports of shortages, but the situation in the other nearby States has benefited as a result.

Generally sound business conditions throughout the South have been dominant factors, with the increasing popularity of closed cars also serving to help. Low prices for sugar cane and sugar beets have slowed sales in the sections devoted to the raising of these crops, and considerable damage was done to rice by salt water, but otherwise the situation is sound.

In the Carolinas and in Kentucky improvement in the used car market is reported, but in Virginia there is some sluggishness noted.

## Central

No outstanding trend is revealed in this part of the country, some States finding business satisfactory and others feeling that it is below what might fairly be expected.

Illinois, Wisconsin, Minnesota and the Dakotas all experienced unusually good sales for the month, and while, in some parts, the used car market is overloaded, on the whole the situation is not bad.

Sales were excellent in most parts of Ohio, Columbus being perhaps the only important exception. Weather conditions were unfavorable, and there were difficulties experienced with a new license law. Some reduction in used-car stocks was noted, but it was felt that there was still a great deal to be done before the market was established on a sound basis.

St. Louis reports:

"Sales during December were quite up to expectations and rounded out a good record for 1925. Dealers are stocking up now for Spring delivery, though the supply of new cars is by no means unduly heavy. The used car situation is satisfactory, and stocks are not too large. There were fewer repossessions in December than in November."

A somewhat different picture is presented in Indianapolis, as is shown by the following report:

"The motor trade situation in Indianapolis developed a slowness not expected during December, due in part to a watchful-waiting attitude of prospective buyers following advance announcements of price cuts to come, the launching of new models that are to be announced in detail shortly, and other causes, some of which are not entirely clear to the trade. General business is excellent."

## Western

In the Mountain States, such as Utah and Colorado, no more than seasonal slackness is reported, with the exception

of Denver, where three bank failures caused considerable apprehension which was reflected in the automotive market. This situation has been cleared up to a great extent and confidence is again growing. Texas, as already pointed out, has suffered from some disappointment with cotton prices.

California, while reporting good new-car sales for the season, is naturally suffering somewhat from the effects of the now famous "finance war."

An appreciable number of the cars sold on insignificant down payments and 24-months' terms are being repossessed, and the most valiant efforts of the dealers and distributors have not sufficed to keep the used-car situation in hand. But here again conditions are on the mend and the outlook, therefore, is favorable.

Considerable satisfaction with the state of the market is expressed in Washington and Idaho. In the agricultural regions East of the Cascade Mountains, especially, the farmers are buying cars in greater numbers than at any time in recent years. Their state of prosperity had been so low for such a long period that cars were maintained to a greater age than would otherwise have been the case, and these ancient vehicles are now being rapidly scrapped.

## Knudsen Predicts Banner Year in 1926

DETROIT, Jan. 7—W. S. Knudsen, president and general manager of the Chevrolet Motor Co., predicts continued prosperity for the automotive industry during 1926.

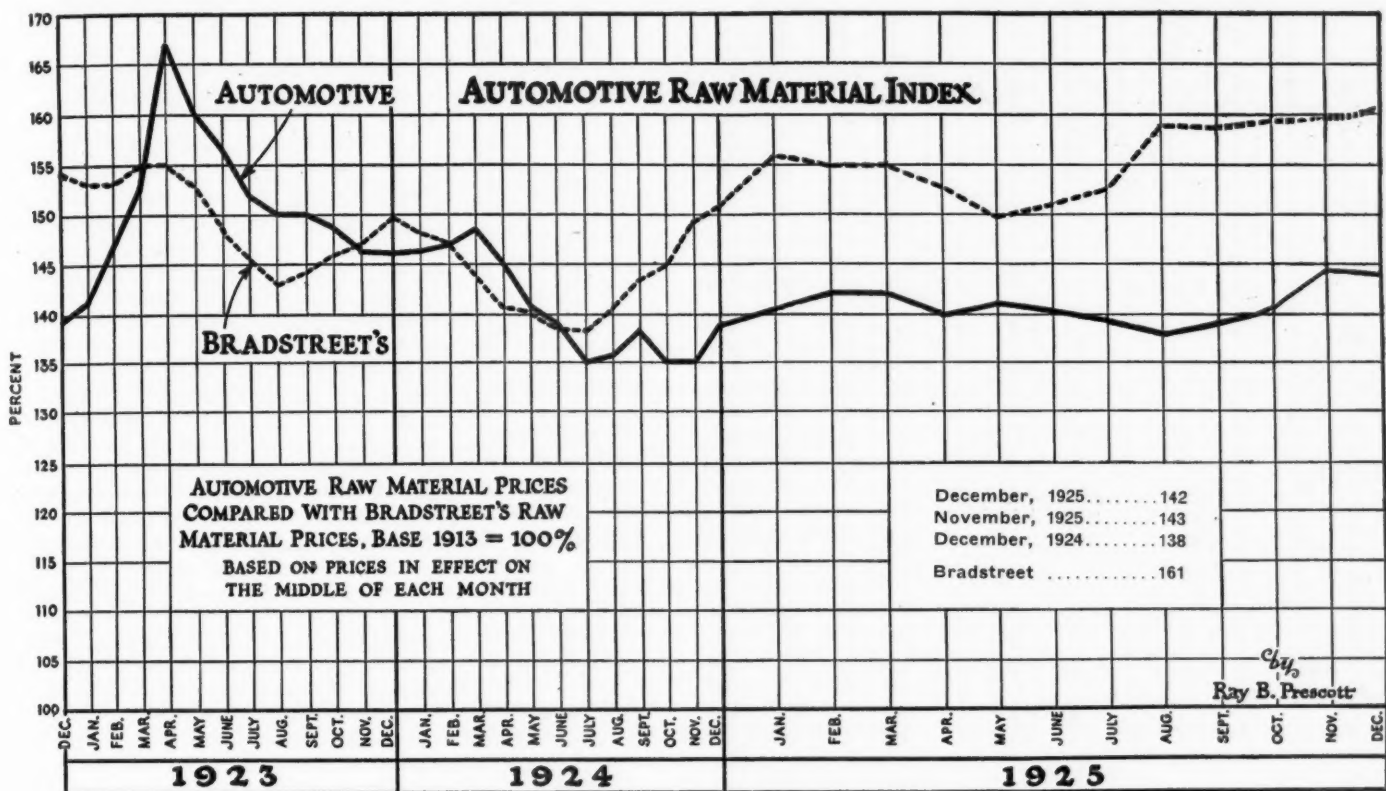
"My opinion is that 1926 will be a good year in the automobile industry," he said. "There will be as many passenger cars and more trucks sold at retail than in 1925. Dealers will improve their merchandising methods, and the dealers who do will increase their turnover. Used cars will have to be treated as merchandise and dealt in as such at fair prices and in running order. Dealers' improvements in shops and tools will help reduce the maintenance cost of automobiles. People will never stop buying good motor cars at the right price."

## Miller Rubber Declares 50c Quarterly Dividend

AKRON, Dec. 29—Directors of the Miller Rubber Co. today declared a quarterly dividend of 50c a share on the new no par common stock, payable Jan. 25 to holders of record of Jan. 5. This is equivalent to \$2.50 on the old \$100 par common stock, on which the dividend was previously \$1.50 per quarter, and represents an increase of 66 2/3 per cent over the previous disbursement.



## December Raw Materials' Index Shows Decline



### Continental's Fiscal Year Net \$3,192,623

DETROIT, Jan. 5—Continental Motors Corp. in fiscal year ended Oct. 31, 1925, made the best showing in earnings for any year in its history, except for its peak years, 1919 and 1920.

Net earnings, after interest and all deductions, except income tax, were \$3,192,623. After Federal taxes, estimated at \$381,300, there remained \$2,811,323 available for dividends on the common stock. This is equivalent to \$1.60 a share on 1,760,845 common shares outstanding, and compares with \$2,502,000 net, after taxes, or \$1.42 a share, for the preceding 12 months. The net earnings for the last fiscal year are exactly twice the current dividend rate of 80 cents a share.

The company's total cash, as of October 31, was \$6,655,484. Total current assets, which include \$6,655,484 cash, \$2,411,383 accounts receivable, and \$5,596,948 inventories, were \$14,667,842, against total current liabilities of \$2,854,781. This is a ratio of more than 5 to 1.

With the addition to surplus account made during the year, that account now totals \$10,348,796, and the book value of the stock is \$15.70 a share.

### "Wetordry" Sandpaper Patents Are Granted

ST. PAUL, Jan. 4—Patents have been issued to the Minnesota Mining & Mfg. Co. of this city covering "Wetordry" sandpaper which permits of the use of

water in sanding in body finishing. Patent No. 1,565,027 covers a waterproof adhesive and No. 1,565,028, the waterproof sandpaper. The latter patent comprises the following claim:

"The new article of manufacture in the nature of sand paper, comprising a flexible sheet of fabric, a grit or layer of abrasive particles, and a waterproof stable adhesive bond interposed between said grit and said sheet, and of a nature adequately to maintain its bonding effect in substantially full measure throughout the effective abrading life of the abrasive article even under sustained application of or immersion in water, but not materially affecting the flexibility of said sheet when dry."

### Public Service Co. to Get Gas-Electric Buses

EAST MOLINE, ILL., Jan. 4—Production schedules beyond the program previously announced for the Yellow Sleeve-Valve Engine Works, which expected to produce 850 motors a month by April, 1926, are anticipated in view of the \$3,000,000 order for 333 gas-electric motor coaches placed by the Public Service Railway Co. of Newark, N. J. with the Yellow Truck and Coach Mfg. Co., the main company of the Yellow Sleeve-Valve. Manager L. R. Ruthenburg is waiting formal order on the job on which delivery is expected to begin in February at the rate of 100 units a month.

Equipment valued at \$250,000 has been ordered for the plant, which is finishing a year with double the output of 1924.

### Rubber Exports Fall Off in November

WASHINGTON, Jan. 7—November exports of rubber products, it is announced here by the rubber division of the Department of Commerce, reached a total value of \$4,294,257, a marked decrease as compared to \$4,956,309 in October, and \$5,065,252 in September, but higher than for any month during 1924 and nearly up to the average for the first ten months of this year.

Higher prices for tires and inner tubes were factors contributing to the fairly high total value for the month, while the factors causing the marked decline as compared with October and September were smaller shipments of automobile tires and inner tubes.

In November, there were 106,368 automobile casings exported to foreign countries as compared with 129,368 in October, and 155,594 in September. The volume figures on automobile inner tubes for November was 93,867, as compared with 120,409 for October.

### Liability Insurance May Be Made Compulsory

WASHINGTON, Jan. 4—Every automobile operator, professional or private, who engages in interstate travel will be compelled to take out liability insurance under the terms of a bill now being drafted by Representative Roy G. Fitzgerald, of Ohio. The bill will be introduced in the House in the near future.

## 100,000 Buses Will Operate in 1926

Brosseau Predicts Great Gain  
in New Type Transportation  
in Coming Year

NEW YORK, Jan. 5—A. J. Brosseau, president of the International Motor Co., manufacturer of the Mack bus, believes that more than 100,000 buses will be operating in this country before the end of 1926, with the de luxe type predominating.

"Steam roads and electric lines show more interest in bus operation than heretofore and the tendency is toward supplementing existing transit facilities with a widespread auxiliary system of coordinated bus routes," says Mr. Brosseau.

"It has been said by men in a position to understand the trend of the bus-train-trolley situation, that the bus will never supplant completely existing forms of transportation, but will supplement them with the peculiar type of service which the fixed track transit lines cannot supply. There are many small trolley lines and short branch steam roads which have never been self-supporting that will give way to the bus. This will happen when it becomes more generally known that buses can be operated more economically than the rail lines over identical routes, and that they are more popular.

### Bus Not a Danger to Big Lines

"The possibility of powerful transit lines losing to bus competition is remote. They will meet this competition with similar service or by purchase of the competing bus line.

"The Public Service Corp. of New Jersey, which is the largest operator of buses in the country, follows the policy of taking over small competing lines, and it is understood that several larger competing companies have been approached.

"Transit lines have a commodity to sell and that commodity is transportation. If the 'fashion' is buses, buses it must be. The shop that does not cater to the latest thing in styles and quality eventually loses its customers to the one with the up-to-the-minute merchandise. The same holds true with transportation. The public wants buses but it is not particular who operates them so long as the operation is efficient.

"Existing transportation companies are the logical operators of buses from every viewpoint. They have the capital, the transportation experience and the ability to carry on bus operation in a manner which will bring back their former patrons. There is profit in the bus business, or it would not continue to exist and thrive. That profit might just as well be made by the companies who were the pioneers in transportation as by the newcomers.

"We are in the middle of a great wave

## GARDNER ANNOUNCES PRICE REDUCTIONS

ST. LOUIS, Jan. 7—Revised prices on the following cars of the Gardner Motor Co., Inc., line are announced as follows:

	New	Old
Eight-in-Line Models	Price	Price
Touring .....	\$1795	\$1995
Roadster .....	1795	1995
Cabriolet .....	2095	2245
4-door brougham .....	1895	1995
Six-cylinder Models		
Touring .....	1395	1395
Roadster .....	1395	1595
Brougham .....	1545	1595

of prosperity, and, while this continues, the motor industry will 'ride' along. I do not see the end of the present era of industrial well-being, and while it lasts bus manufacturers will get their share.

"With our own company, business has been exceptionally good in the last year. Production of buses in our three factories increased more than 200 per cent in 1925, as compared with 1924. I look for similar increases in 1926, particularly if steam and trolley lines go into the business of bus transportation as strongly during the coming year as they have done in recent months."

## Van Dorn Iron Works Adopts Group Insurance

CLEVELAND, Jan. 4—Increased efficiency among its 540 employees is expected as a result of a general insurance plan announced recently by H. A. Rock, president of the Van Dorn Iron Works Co.

The insurance was placed with the Metropolitan Life Insurance Co. and the coverage exceeds \$900,000. Premiums are to be paid jointly by the company and individual employees. Individuals are covered for \$1,000 to \$3,000 and full amounts of their policies in case of disability before sixty years of age.

The Van Dorn Co. is manufacturer of light and heavy pressed steel parts for the White Motor Co. and other automotive manufacturers here, and also manufactures dump truck bodies and truck hoists.

## James L. Geddes Dies

SPRINGFIELD, OHIO, Jan. 5—James L. Geddes, 69, president of the Kelly-Springfield Motor Truck Co., died this morning at his home, 1832 E. High St., from paralysis, after an illness extending over five years.

Before taking charge of the local plant, Mr. Geddes was president of the Detroit Gas Co. He was born in Aberdeen, Scotland. During the World War he devoted most of his time to looking after the company's business in Washington, D. C.

## Automotive Demand Big Factor in Steel

Cold-Strip Mills' Orders Large,  
With Automobile Sheets  
in Good Request

NEW YORK, Jan. 7—Automotive demand is to the fore in the year's initial activities in the steel market, and indications are that, during the year's first quarter, automotive requirements will be the chief source of the steel industry's sustenance. Quite a few passenger motor car manufacturers notified steel mills not to make shipments during the holiday period so as to keep this raw material out of inventories, but most of the shipments that were held up in response to these instructions are now going forward, and what few specifications have been suspended are being rapidly reinstated.

Cold-strip mills are in especially favored position with reference to automotive orders, as is shown by many asking from four to six weeks to make shipments of new business. Hot-strip mills are also fairly well booked ahead, but the demand for narrow strips is considerably in excess of that for the wider kind, and shipments of the latter can usually be made within the fortnight in which they are ordered.

Rollers of full-finished automobile sheets report orders on hand and coming in as very good, and again talk of higher prices is heard. The market for semi-finished steel continues to display a hardening tendency, and sheet bars are in tight supply at the present price level.

### The Metal Market

**Pig Iron**—Dullness continues. Automotive foundrymen are of the opinion that it will be well to wait until after Jan. 15 before covering. By that time, something more definite will be known regarding the coal and coke outlook. In the meantime, however, sales agencies have a few inquiries on hand, showing that demand is slowly beginning to reassert itself.

**Aluminum**—Relatively good-sized ton-nages of Norwegian, British, Swiss and German metal have arrived of late.

The sole domestic producer lowered the price on Tuesday 1 cent a pound, retroactive to Jan. 1. Importers were compelled to follow suit on new business.

**Copper**—Good domestic demand makes up for lack of foreign buying, but the latter circumstance keeps prices low. Connecticut brass mills are working at a fair rate.

**Tin**—The bulls at London and Singapore are still more frequently at the bat than are the bears. Consuming demand is restricted to metal urgently needed.

**Lead**—Storage battery demand continues a most important market factor. The market is firm.

**Zinc**—Dull, but steady.



## L.G.S. Announces Contract with G.M.

### Right to Make Clutch Drive Mechanism Granted to Latter

INDIANAPOLIS, Jan. 4—Announcement was made here yesterday by the L.G.S. Devices Corp. that it had entered into a contract with General Motors, by which that concern obtains the right to use, manufacture and sell to automobile and airplane makers throughout the world a newly-developed clutch drive mechanism adapted especially for the starter drive of electric starters. In addition to patent rights, which go to General Motors on a lease arrangement, the L. G. S. Devices Corp., which owns the patents, will also manufacture through its L.G.S. Mfg. Co. parts of the device to be used by General Motors and the Remy Co., which, it is understood, will handle the entire manufacturing for the parent General Motors.

The L.G.S. Devices Corp. and the manufacturing company are outgrowths of the old Central Gear & Mfg. Co., and the patent-owning and operating concern of the Spring Clutch, as it was originally called, moved recently into enlarged quarters, and it is understood also to have a valuable contract from Remy to manufacture parts of the device for that concern. It also continues to produce gears and screw machine parts for the automotive and manufacturing trade, and is at work on several other developments of this clutch principle and device.

Albert Lieber is president of both L. G. S. concerns, while W. Carleton Starkey is vice-president of the device concern and general manager of the manufacturing company. The latter said today that he had been approached by some of the most substantial motor car companies for experimental sets of his new device.

## First Public Showing of New Stutz "8" Made

INDIANAPOLIS, Jan. 5—The first public showing of the new Stutz vertical eight was made at an all-day reception at the factory of the Stutz Motor Car Co. of America, Inc., here yesterday. This was in accordance with a promise made to the city officials by President F. E. Moskovics on the occasion of the recent convention of Stutz dealers.

More than 5,000 citizens of Indianapolis, including officials and representatives of business bodies, were present at the reception.

## Diana Sales' Change

NEW YORK, Jan. 5—As a result of the announcement by Stewart MacDonald, president of the Moon Motor Car Co., Inc., Moon-Diana sales to New York, Philadelphia and Chicago dealers in future will be handled through factory

## Preliminary "Facts and Figures" Shows Record-Breaking Year for Industry

NEW YORK, Jan. 6—Alfred Reeves, general manager, National Automobile Chamber of Commerce, has issued the preliminary "Facts and Figures of the Automobile Industry" for 1925 as follows:

PRODUCTION			
Cars and trucks.....	4,325,000	Plate glass, per cent of, used by automobile industry ...	50%
Cars .....	3,833,000	Copper, per cent of, used by automobile industry .....	8%
Trucks .....	492,000	Iron and steel, per cent of, used by automobile industry .....	11%
Percentage increase over 1924 .....	19%	Upholstery leather, per cent of, used by automobile industry .....	65%
Production of closed cars..	2,157,000	Gasoline consumed by motor vehicles, 1925 (gals.) .....	7,494,000,000
Per cent closed cars.....	56%	Crude rubber used in manufacturing tires, 1925 (lbs.) .....	769,000,000
Total wholesale value of cars	\$2,500,000,000	Cotton fabric used in manufacturing tires, 1925 (lbs.) .....	226,000,000
Total wholesale value of trucks .....	\$500,000,000	MOTOR BUS AND MOTOR TRUCK	
Total wholesale value of cars and trucks .....	\$3,000,000,000	Buses in use .....	70,000
Tire production .....	55,750,000	Motor buses produced .....	15,000
Wholesale value of motor vehicle tire business.....	\$836,700,000	Consolidated schools using motor transportation .....	11,838
Total wholesale value of parts and accessories, exclusive of tires .....	\$1,000,000,000	Street railways using motor buses .....	251
Average retail price of car, 1925 .....	\$866	Buses used by street railways .....	5,000
Average retail price of trucks, 1925 .....	\$1,350	Buses used by steam railroads .....	367
Number of persons employed in motor vehicles and allied lines .....	3,200,000	Steam railroads using motor buses .....	20
Special Federal excise taxes paid to U. S. Government by automobile industry in 1925 .....	\$126,552,000	Railroads using gasoline rail motor coaches on short lines .....	190
REGISTRATION		Railroads using motor trucks as part of shipping service .....	51
Motor vehicles registered in U. S. (approx.).....	20,000,000	EXPORTS	
Motor cars .....	17,500,000	Number of motor vehicles exported .....	550,000
Motor trucks .....	2,500,000	Value of motor vehicles and parts exported .....	\$392,600,000
World registration of motor vehicles .....	24,600,000	(Including engines and tires)	
Per cent of world registration owned by U. S. ....	81%	Per cent increase in motor vehicles exports over 1924 .....	44%
Motor vehicle registration on farms .....	4,600,000	Per cent of motor vehicles exported .....	12.2%
Motor cars .....	4,160,000	Number of motor vehicles imported .....	630
Motor trucks .....	440,000	MOTOR VEHICLES' RETAIL BUSINESS IN U. S.	
Miles of improved highway	495,000	Total car and truck dealers .....	47,014
Total miles of highways in U. S. ....	3,002,916	Public garages .....	55,000
AUTOMOBILE'S RELATION TO OTHER BUSINESS		Service stations and repair shops .....	75,105
Number of carloads of automotive freight shipped over railroads in 1925.....	3,040,000	Supply stores .....	61,617
Rubber, per cent of, total U. S. consumption used by automobile industry .....	84%		

branches under direct factory contracts, instead of through jobbers or distributors.

Coghlan Bros., operating as Moon Motor Car Co. of N. Y., no longer represents the Moon Motor Car Co., and the latter is reported as negotiating for the purchase of the Coghlan concern.

## Gasoline Consumption is Down 6% in November

WASHINGTON, Jan. 5—Gasoline consumption averaged 25,270,000 gallons daily in November, according to announcement just made by the U. S. Bureau of Mines. November consumption represents a decrease of 6 per cent compared with October consumption.

Despite the enormous consumption, a total of 1,589,880,000 gallons was on storage Nov. 30.

Gasoline production in November amounted to 922,058,000 gallons, an average of 30,735,000 gallons per day—or approximately 5,500,000 gallons more production than current consumption.

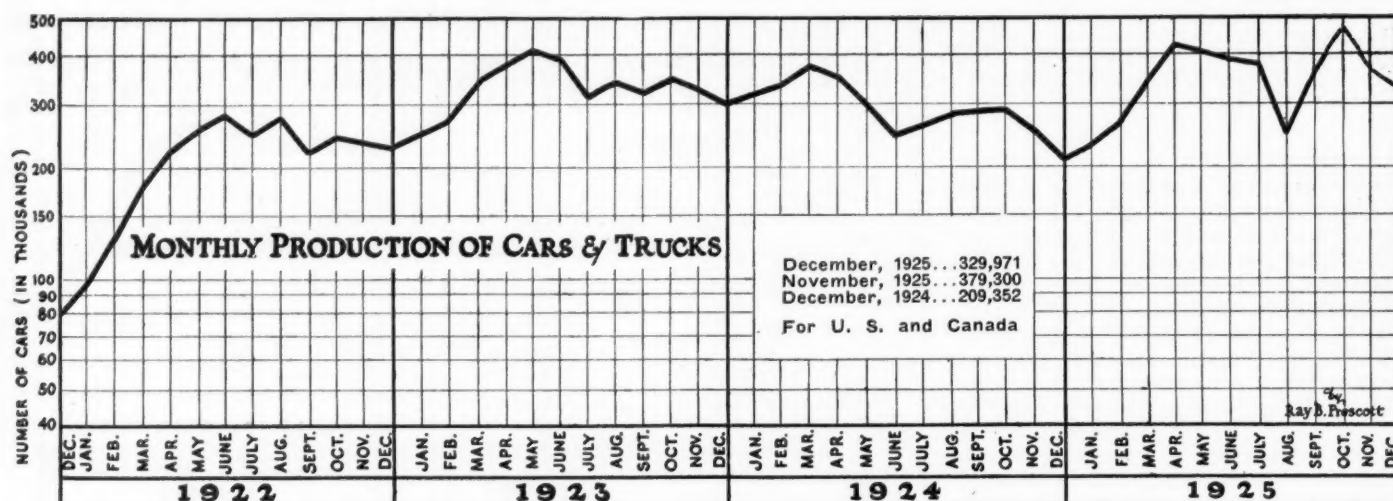
## Mexican Roads Reduce Minimum Carload Weight

NEW YORK, Jan. 7—The National Railways of Mexico, with approval of the Mexican Government, has granted a reduction in the minimum carload weight on automobiles, according to J. S. Marvin, manager of the traffic department of the National Automobile Chamber of Commerce. For years the traffic division of the industry has urged the Mexican railways to adopt the 10,000-lb. basic minimum used by the United States railroads. Under the new adjustment, the 36-ft. car minimum becomes 12,610 lbs. in Mexico instead of 22,046 lbs.

The new basis, effective December 25, is 6,000 kilograms on freight cars 40 ft. in length, adding 3 per cent per ft. for cars over 40 ft., and deducting 3 per cent per ft. for cars under 40 ft.

The average saving on four well-known makes is figured at \$32 per machine, due to the fact that it was impossible to load in the freight cars the weight prescribed under the old scale.

## December Car and Truck Production 329,971

Special Equipment  
Offered for Fords

DETROIT, Jan. 7.—The Ford Motor Co. will make the first public display during the week of the New York Automobile Show of a new line of special equipment manufactured and developed for the Ford cars by their company. The new items include wire wheels, windshield wings, gypsy curtains, top boot, double bar bumpers for front and rear and an automatic windshield cleaner. These parts will be sold by their regular dealer organization throughout the country and each part will bear the Ford trade mark.

The new wire wheels, which have been on the market in several parts of the country for a number of months, are perhaps the most interesting development. These wheels have a drop-base type rim with the spokes attached to the rim and axle hub through an electrical welding process forming a one-piece unit, thus eliminating nipples for tightening and adjusting the spokes.

Ford Ships by Water to  
Miami and New Orleans

CHESTER, PA., Jan. 4.—The first activities of the Ford Motor Co. here got under way today at the Sun Shipbuilding and Drydock Co. with the loading of the "East Indian," a converted freighter, with fifty freight-carloads of Ford parts shipped from Detroit.

The "East Indian" is one of the boats obtained from the U. S. Shipping Board, and was towed here to be fitted with Diesel engines. After the loading is completed, the ship will proceed to Philadelphia and take on 750 assembled automobiles from the Philadelphia branch, and proceed to Miami, where the assembled cars will be unloaded, and thence to New Orleans, where the parts will be taken off. This is the first automobile carrier of the Ford fleet to be used to

hasten shipments to Florida to combat the railroad freight embargo.

The Ford Co. is planning the erection of a \$1,800,000 assembly plant here on the river front in the immediate future.

Four Engines Qualify  
in French Plane Test

PARIS, Dec. 22 (by mail).—After lasting nearly two years, the French Government 240-hour aviation engine competition, for which 2,000,000 francs was offered, has just come to a close with the following engines qualified: one Renault with direct-drive propeller; one Renault with geared-down propeller; one Lorraine-Dietrich; and one Panhard-Levassor sleeve-valve type.

After a preliminary test and use on an airplane at an altitude of 6,000 feet, the competing engines had to submit to a bench test of 240 hours in periods of eight hours. If a certain number of points were lost, or if ten of the 8-hour tests were cancelled, the engine was ruled out of the competition. The power output had to be between 350 and 450 hp., with a maximum weight of 7.2 pounds per hp., this including gasoline and oil for five hours' running. The weight of tanks was not included.

Originally, there were thirteen entries, but Hispano-Suiza, Salmson, and Fiat engines did not compete.

Flint Stockholders to Vote  
on Corporation Changes

FLINT, MICH., Jan. 4.—A special meeting of the stockholders of the Flint Motor Co. has been called for Jan. 18 to amend the articles of incorporation to give the directors authority to mortgage the property of the company.

The money obtained will be used, it is stated, to furnish additional capital for expanding the company's business, and to apply against advances made the company by Durant Motors, Inc.

To Begin Hearings  
on Interstate Law

WASHINGTON, Jan. 5.—Hearings on the Cummins bill to regulate interstate motor bus traffic, which will begin before the Senate Interstate Commerce Committee about the middle of this month, will be long-drawn-out and probably acrimonious, it was indicated this week when the first list of witnesses who will appear before the committee was made known.

The hearings probably will be continued through the latter half of January and into February. Senator Watson, of Indiana, chairman of the Interstate Commerce Committee, has not yet set a date for the hearings, which will follow those on radio and the Gooding long and short haul railroad bill.

## Railroad Representatives

The National Association of Railway Utilities Commissioners, which took a leading part in the framing of the measure, will be represented by John E. Benton. Judge A. P. Thom, counsel for the Association of Railway Executives, who also took a prominent part in preparation of the bill, will be the chief witness for the railway men.

The American Automobile Association will not be represented as a whole but the bus operators' division of the association will be represented by George P. McCallum, president of the Michigan Highway Association.

Representative James S. Parker, chairman of the House Interstate and Foreign Commerce Committee, will introduce the Cummins bill in the House soon after the Christmas holidays.

## U. S. Rubber's New Bus Tire

NEW YORK, Jan. 5.—The United States Rubber Co. has announced a new tire, to be known as the Royal Cord Motorcoach, exclusively for motor coach service.



## G. M. Sold 833,000 Automobiles in 1925

### A. P. Sloan, Jr., Urges Output to Keep in Line With Demand

NEW YORK, Jan. 7—General Motors in 1925 sold at retail 833,000 cars, a new record of sales, according to a statement issued here by Alfred P. Sloan, Jr., president of the corporation. This figure includes all of the manufacturing divisions—Chevrolet, Oldsmobile, Oakland, Buick and Cadillac—as well as overseas assembly operations.

Continuing, Mr. Sloan commented on the outlook as follows:

#### Factors to Consider in 1926

"One factor, in my judgment, having a material influence on the future is the absolute necessity of regulating our production to our retail sales—we must not overproduce. General Motors' policy has been definitely established in this regard. We are closing the year with stock in the hands of our field organization sufficient only to move current retail sales. In January and February we shall build up somewhat to take care of the Spring peak—that is the economic thing to do from the standpoints of the manufacturer and dealer, as well as the consumer—all parties to the transaction.

"Another important factor that must be given even more attention in the future is the relationship of the dealer and the manufacturer. I believe that a great deal of progress has been made in the last year or so in this regard. General Motors recognizes the dealer as a member of the General Motors' family, and every policy formulated by us has that fundamental principle in mind. Unless the dealer prospers, we can not prosper. I believe that there are many ways in which the manufacturer, by closer co-operation with the dealer and a better appreciation of some of the burdens that he is carrying, can materially reduce these burdens."

Mr. Sloan also urged conservatism in the time-financing of sales.

### Paige-Detroit Plant Now on Full Output Schedule

DETROIT, Jan. 4—Officials of the Paige-Detroit Motor Car Co. announced today the plant is operated on full production schedule, following the recent introduction of the New-Day Jewett.

Although the Paige-Detroit factory is one of the newest in this area, it had to be enlarged, remodeled, and equipped with new machinery to handle the New-Day line.

### Gen. Tire's Gross Up 50%

AKRON, Jan. 7—General Tire & Rubber Co. has doubled its factory capacity within the last three years, according to announcement here. Plant additions have been made in the last year, and two more

additions are now under way.

In the report to stockholders at the annual meeting Dec. 31, net profits were listed at \$1,843,299, compared to \$1,500,000 in 1924. This was equivalent to \$44 a share on the common stock, which has a \$50 par value. Gross business was \$18,700,000 for the year ended Nov. 30, representing an increase of practically 50 per cent over the previous year.

The balance sheet shows that the company's surplus has been advanced from \$1,878,766 to \$3,193,539 during the year. Dividends of 14 per cent were paid on the common stock, after paying the 7 per cent regular preferred dividend.

Officers and directors were re-elected for the coming year.

## Hercules Motors to Enlarge Plant

CANTON, OHIO, Jan. 7—An expansion program of great proportions, including not only a large additional building to the present plant, but noteworthy additions to the sales and advertising programs have been announced by the directors of Hercules Motors Corp. here.

The addition to the former line of two larger engines, models "TX" and "TXA" of respectively 75 hp. and 100 hp., has made the building program imperative to afford proper production facilities.

The directors authorized the payment of a 10 per cent cash dividend to stockholders as of Jan. 11, 1926. This dividend rate will be paid on the entire paid-in capital.

The new addition, construction of which will begin immediately, will contain 14,000 sq. ft. floor space. Additional machinery and equipment have already been purchased.

The former directors and officers have been re-elected.

### Auburn Shows \$468,054 Income for Five Months

AUBURN, IND., Jan. 5—The Auburn Automobile Co. reports for the five months of the fiscal year ended Nov. 30, 1925, net income, before taxes, of \$468,054; reserves for Federal taxes of \$61,501; surplus for the five months of \$361,553, and earnings per share on the common, based on 60,000 shares, of \$6.77 a share.

The comparative balance sheet, as of Nov. 30 showed cash on hand amounting to \$1,072,417, and net working capital of \$1,383,102. These figures compare with the figures for the six months ended Dec. 31, 1924, of \$85,478 and \$967,961, respectively.

### C. G. Spring Co. Expands

DETROIT, Dec. 31—With additions to their Chicago plant scheduled to be completed Feb. 1 and the rebuilding of their Detroit plant to be finished March 1, the output of the C. G. Spring and Bumper Co. will be increased to 100,000 daily daylight capacity.

## FINANCIAL NOTES

**Hood Rubber Co.**—This company, in announcing plans for substituting a new issue of 7½ per cent preferred stock for the existing 7 per cent sinking fund issue, stated that its sales for the year ending March 31, 1926, would approximate \$40,000,000, with satisfactory profits.

Issue of the new stock requires the assent of three-fourths of the preferred stock outstanding. The plan has already been approved by several large stockholders, it was further announced.

**Stromberg Carburetor Co. of America, Inc.**—This company reports cash on hand Sept. 30, 1925, as \$679,027, as compared with \$811,566 on Dec. 31, 1924, and net working capital on the former date as \$1,869,726, compared with \$1,601,844 on the latter date.

Net tangible assets, excluding \$200,377 patents, applicable to the 80,000 shares of no par value, amounted to \$3,730,671, or \$46.63 a share, compared with \$42.80 per share Dec. 31, 1924.

**Moon Motor Car Co.**—The regular quarterly dividend of 75 cents a share was declared Monday, payable Feb. 1 to holders of record of Jan. 15. This is the company's thirty-eighth consecutive dividend. Stewart MacDonald, president of the company, said that, although net earnings were twice dividend requirements in 1925, in view of the enlarged program in 1926 the directors did not favor increasing the dividend. The company has no debts, bonds or bank loans.

**Lee Rubber & Tire Corp.**—This corporation, for the year ended Dec. 31, 1925, reports net income, after taxes, depreciation and interest, of \$270,000, as compared with a deficit of \$234,473 on Dec. 31, 1924. Earnings per share on the capital stock, based on 214,837 shares, were \$1.26, as compared with nothing last year.

**Flisk Rubber Co.**—This company reports in its consolidated balance sheet as of Oct. 31, 1925, cash on hand amounting to \$8,148,897, compared with \$2,246,956 at the same time last year, and net working capital of \$28,060,913, against \$21,852,514 on the same date in 1924.

**Briggs Manufacturing Co.**—This company has declared a dividend of 75 cents, payable Jan. 25 to stock of record Jan. 9. Three months ago a dividend of 37½ cents was declared, a reduction from the previous rate of 87½ cents quarterly.

**Chandler Motor Car Co.**—This company, in its consolidated balance sheet as of Nov. 30, 1925, reports cash on hand totaling \$1,465,386, total current assets of \$7,068,742, and net working capital of \$2,490,515.

**Dodge Bros., Inc.**—This company has declared quarterly preferred dividend of \$1.75, payable Jan. 15 to holders of record Jan. 2.

**Perfecto Gear Differential Co.**—Directors of this company have declared a special dividend of 3 per cent.

## Dunlop Issues Stock to Buy Companies

LONDON, Dec. 24 (by mail)—The Dunlop Rubber Company is issuing new stock for £2,000,000, consisting of 6 per cent second mortgage debentures, the price of issue being 98 per cent. It is stated that the object of the issue is to provide the major portion of the purchase price of the shares to be acquired in a group of ten companies manufacturing pneumatic and solid motor tires and general rubber goods, including surgical appliances.

The companies to be acquired are:

Charles MacIntosh & Co.  
Broadhurst & Co.  
Campbell, Achnach & Co.  
Casold, Ltd.  
Manchester Balata Belting Co.  
MacIntosh Cable Co.  
New Eccles Rubber Works.  
New Liverpool Rubber Co.  
Shrewsbury & Challiner Tyre Co.  
Wm. Knott & Son

According to certified reports, these companies together have made an average annual profit amounting to £256,765 in the last three years.

## To Investigate Handling of Aluminum Co. Charges

WASHINGTON, Jan. 5—An order for senatorial investigation of the Department of Justice's handling of the anti-trust charges against the Aluminum Co. of America was passed in the Senate today after introduction by Sen. Walsh, of Montana. Approximately 25 per cent of the entire aluminum output is con-

sumed in the automobile industry, and, as a result of the alleged combine in the aluminum industry, automobile manufacturers have paid excessive prices for their aluminum, it is charged. The aluminum company is partly owned by Secretary of the Treasury Mellon.

## Graham Ships 21,415 Trucks in 11 Months

DETROIT, Jan. 7—Figures released by Graham Bros. show an increase of 11,931 trucks shipped in the first eleven months of 1925, as compared with the same period in 1924.

Shipments for the first eleven months of 1925 amounted to 21,415, or 10,628 in excess of the entire output for 1924. Exports for the same period this year were 3,975, as compared to 1,325 for the same period last year.

According to officials of the company, vastly increased exports; and increased bus output accounted for a substantial portion of the company's production.

## President's Oil Board to Hold Hearings in Feb.

WASHINGTON, Jan. 5—Public hearings before the President's Oil Board will begin early in February, it was announced this week. Purpose of the investigation is to devise ways and means of conserving the Nation's diminishing crude oil supply. Oil men will be heard first, followed by engineers from the automotive industry, and stationary crude oil engine users as to ways and means which the engineering fraternity might suggest as a method of saving gasoline.

## Roos Named Chief Engineer of Marmon

INDIANAPOLIS, Jan. 5—The appointment of D. G. Roos as chief engineer of Nordyke & Marmon Co. was announced at the Marmon convention yesterday by President G. M. Williams.

Mr. Roos is well known to the technical and automotive trade as the chief engineer of the Locomobile Co. of America, Inc., an institution which he has served continuously for thirteen years, following service with the General Electric Co. and other industrial leaders. He is a graduate of both the mechanical and electrical departments of Cornell University, and has made extensive studies of European automotive and engineering practice. He came to Nordyke & Marmon Co. some time ago as associate in the engineering department, and has just accepted the new position of chief engineer under Col. Howard C. Marmon, vice-president in charge of engineering.

In an address to the Marmon convention this morning, Mr. Roos gave a very clear statement of the high rank of the Marmon in the industry, and the pleasure a close study of the car and the production methods give an outsider, possessing a comprehensive engineering background by which to judge the institution and its product.

## Electric Co. Changes Name

NEW YORK, Jan. 5—The Western Electric Co. of this city has announced a change in its title to the Graybar Electric Co. The company is located at 100 E. 42nd St.

## Developments of the Week in Leading Motor Stocks

NEW YORK, Jan. 7—The extraordinary transactions incident to the ending of the old year and the ushering in of a new one have been responsible not only for remarkable changes in bank statements but for irregular and erratic fluctuations in prices of stocks on the New York Stock Exchange. This has been true especially of the automobile issues in which the impending national automobile show, to be held here next week, has been an important influence. Aggressive strength in many of the motor stocks has been accepted as "window dressing" in anticipation of that event, and, hence, has been looked upon with some skepticism by the professional fraternity. Easing of money rates in the closing days of the week reflected the return to the banks of funds withdrawn by corporations in payment of interest and dividend obligations.

Hudson and General Motors have monopolized the speculative attention in this group, both stocks advancing to the highest levels recorded since the drastic decline of November. Buying in both was in part due to the retirement of short contracts, and in part to absorp-

tion by large interests in anticipation of substantially higher prices later in the Spring.

### Lower-Priced Stocks Strong

The strength in General Motors and Hudson was emulated in more modest fashion by the lower-priced stocks of this group, including Packard, Pierce-Arrow, Jordan, Hupp and Moon. Before allowing its enthusiasm to sway its judgment, the speculative element is inclined to await developments in order that it may appraise more clearly the relation of demand to production and of costs to selling prices. The selling which came into many of these stocks in the early part of the week, apparently, was in part due to the replacement of short lines which had been covered just prior to the first of the year in order that losses might be recorded for income tax purposes. In part, it was due to pressure from professionals seeking a nimble profit, and in part to liquidation by holders who had carried stocks down through the recent decline, and who were using the strength to escape from their transactions without loss.

Some of the reports which accom-

panied the strength in the closing days of last week included a revival of the story that both Willys-Overland and Dodge common stocks would be placed upon a dividend basis during the first half of the year. Another was that the controlling interest in Chrysler advocated a dividend of \$5 annually on the new stock, equal to \$20 per share on the old stock. It is expected that the fourth quarter report of the General Motors Corp. will show earnings equal to about \$5.50 per share, thereby justifying the payment of another extra dividend in the first quarter of this year. It is not believed in well-informed quarters, however, that this extra disbursement will be as large as that in the previous quarter.

There were spasmodic upturns in the tire and rubber stocks due to the various conflicting reports from Washington as to the controversy between rubber-consumers in this country and the British rubber-producing interests. The activities of professional speculators rather than any change in fundamental conditions was responsible for such price changes as occurred.—H. H. S.



## Hoover to Address N.A.C.C. Banquet

"Why America Should Oppose  
Gov't. Control of Rubber  
Imports" is Topic

NEW YORK, Jan. 7.—Herbert Hoover, Secretary of Commerce, will be the speaker at the annual banquet of the National Automobile Chamber of Commerce at the Hotel Commodore on Jan. 12, during automobile show week. Mr. Hoover will speak on "Why America Should Oppose Government Control of Rubber and Other Raw Material Imports."

Recent inauguration of a campaign for the better use of rubber and tires, and discussions of the reaction of both Britain and America as to the international implications, and possibly complications, of the situation will make the Hoover address one of the most significant features of New York show week.

Alfred P. Sloan, Jr., chairman of the banquet committee, announces that "Senator" Edward H. Ford will be the humorous speaker, and there will be the usual burlesque decoration of five automobile manufacturers for great achievements in 1925.

The banquet is limited to one thousand guests, which is the comfortable seating capacity of the Commodore ballroom.

At the guests' table this year will be representatives of many of the foreign countries that are sending delegates to the Second World Motor Transport Congress.

## Hayes Wheel Co. Earnings \$8 a Share Last Year

JACKSON, MICH., Jan. 5.—Earnings of the Hayes Wheel Co. for 1925 are estimated to have reached \$8 a share, compared to \$3.16 a share for 1924, it was announced by C. G. McKay, secretary of the company.

Total 1925 earnings on 197,000 shares outstanding are estimated at \$1,700,000, while 1924 earnings were \$715,000, Mr. McKay said.

## New Ahlberg Bearing

CHICAGO, Jan. 7.—The Ahlberg Bearing Co., of Chicago, has started the manufacture of new ball bearings. The company for fifteen years has been engaged in the reclamation of worn ball bearings, but now offers a product of its own, the CJB Master Bearing. \$4,000,000.

## Auld Co. Adds to Plant

COLUMBUS, OHIO, Jan. 5.—The D. L. Auld Co., manufacturer of interior hardware for closed automobiles, has completed extensive additions and expansions to its business and is now in a position to take care of its rapidly increasing business.

Two additions, each one story high and

of saw-tooth construction, have been completed. One of the additions is 200 x 40 feet and the other 50 x 70. The purchase of six additional 600-ton and 800-ton presses has been made and these machines are being installed. The capacity of the automobile department has been increased about 50 per cent.

## Foresee Hardwood Shipments' Record

ATLANTA, Jan. 7.—Though hardwood mills in the Southeastern territory are unable to operate very extensively because of rainy weather that has been general for some weeks, the trade in Atlanta states that the automotive industry has been slowly increasing its orders in the last two or three weeks, so that this volume has now reached a point where it is almost equal to production.

The volume of orders being placed for delivery during the first quarter of the year has been unusually heavy, and there is every indication that shipments to this industry between January and March will establish a new record for this period. Orders for such shipments now in the files of the mills are considerably larger than they were at this time last year or the year before, and about equal to the peak period in the past seven or eight years, so far as first quarter delivery is concerned. Most of this business is for the thicker sizes of white ash, maple and elm, with a fair amount of business reported in hickory and gum woods. The latter are particularly high in price, the other woods showing no changes in the last few weeks.

Unless the production situation improves, however, within the next four or five months it is likely that shipments to the automobile industry will be somewhat retarded, as this is proving one of the wettest seasons in the Southeast in some years.

## Plans for Second Bus Show in Detroit in 1926

DETROIT, Jan. 5.—The Second National Motor Bus Show will be held in Detroit, either the first or the last week in March, C. E. Stone, chairman of the general committee, has announced. The former seems to be the more acceptable date.

The show, which will be held in Convention Hall, will be along the lines of the one held here last Fall, but with the addition of taxicabs. Preparations for holding the show are being made under arrangements of the general committee.

## Indiana Car Taxes \$15,000,000

INDIANAPOLIS, Jan. 5.—Indiana motorists paid in license fees and gasoline tax last year more than \$12,281,809 and \$3,000,000 in personal property taxes on their motor cars. The total number of cars and trucks registered in the State during 1925 was 735,097.

## Horne Replies to Hoover on Rubber

Says British Government Never  
Promised to Keep Price  
Under 36c

NEW YORK, Jan. 4.—Britain's reaction to the American campaign for the better use of rubber and to American charges that the Stevenson Restriction Act has raised prices of crude to a point which makes such a campaign necessary has been summarized by Sir Robert Horne, formerly Chancellor of the Exchequer, in an article in the New York Times.

Admitting that present prices are too high for the welfare of the rubber industry, in the long run, Sir Robert holds that the restrictions have had at most only a secondary influence in the sharp advance registered last year.

## Car Output Increased Responsible

"The fundamental cause of this advance," he says, "has been an enormous increase in automobile production and the introduction of balloon tires" and he insists that there has been no British discrimination against the United States. He points out that British consumers and manufacturers pay the same high prices as those paid by Americans. He regards as a fallacy the statement frequently made by Americans that the Stevenson Act is British Government price-fixing.

## Buyers Missed Chance

Sir Robert emphasizes the fact that 18 months after the Stevenson act became effective the average price of rubber for the quarter was below 22 cents a pound, and he criticizes buyers for not taking advantage of the lower prices in providing for their future needs. He says:

I see that it has been stated in America that the British Government guaranteed that the price of rubber should not rise beyond 36 cents. No such guarantee has ever been given by any person in behalf of the British Government, and no evidence of such a guarantee can be produced.

## Consumers Partly to Blame

Statements were made by some rubber producers to the effect that they believed that, if the rubber industry got a fair chance, the American manufacturers would be able to obtain all the rubber they required at 36 cents. I believe that in this view they would have been proved not far wrong if the consumers, instead of adopting a hand-to-mouth policy in purchasing, had placed their orders with sufficient foresight to enable the rubber industry to accommodate itself to the prospective demand.

I agree with those who think the present high prices of rubber are a disadvantage ultimately to the rubber-producing industry itself. I should like to see them back at a more healthy figure. I am confident that the ordinary operation of economic laws and market conditions will bring about that result.

## Men of the Industry and What They Are Doing

### G.M. Head Announces Promotion of Horner

Alfred P. Sloan, Jr., president of General Motors, announces that F. C. Horner of his staff has been appointed assistant to Vice-President A. H. Swayne, chairman of the corporation's Traffic Association. Mr. Horner will be in charge of the commercial motor vehicle field on steam and electric railroads. In connection with this announcement, Mr. Sloan said:

"The position of the commercial motor vehicle, truck and bus in the railroad field offers tremendous possibilities for the railroads as well as the motor industry. . . . Our research and study of the whole transportation problem leads us to believe that the railroads and electric railways of this country will eventually be the largest users of commercial vehicles in the world. . . . A railroad service department was started more than two years ago, under the direction of Mr. Horner, for the express purpose of dealing with this problem in a definite manner."

### Gaydon Seeks Agency

Consular advices advise the automotive division of the Department of Commerce that Arthur Gaydon, a director in the firm of Fisher & Simmons, Johannesburg, South Africa, will be in New York City early in January to visit the New York Show.

Mr. Gaydon is interested in making a connection with an American firm for the representation of passenger cars, trucks and buses. Interested firms are advised to communicate with him in care of the New York office of Kemsley, Millbourn & Co., Ltd., 90 West St.

### Anderson District Manager

Dr. Robert J. Anderson, consulting metallurgical engineer, has just been appointed district manager of F. J. Ryan & Co., industrial heating engineers, Philadelphia. Dr. Anderson will represent the company in Cleveland and the Ohio district and surrounding territory.

F. J. Ryan & Co. is a manufacturer of electric and fuel-fired furnaces, combustion and temperature control systems, oil and gas burners, core and mold ovens, and other industrial heating equipment.

### Brandt Vice-President

A. J. Brandt has been elected vice-president in charge of production of the Oakland Motor Car Co., it was announced in Pontiac, Mich., last week.

### Haker Comes from Sweden

T. I. Haker, assistant manager of Amerikanska Motor Importen, Stockholm, Sweden, sailed on the S. S. "Gripsholm" from Gothenburg for New York, Jan. 5, and while in this country will be at the

### N. A. C. C. RECEIVES PATENT COLLECTION

Alfred O. Dunk, president of the Puritan Autoparts Co., Detroit, has presented to the National Automobile Chamber of Commerce original tracings, drawings, blueprints and United States and foreign patents which were the property of some 756 automotive plants which have gone out of existence.

These tracings and patents are given to the National Automobile Chamber of Commerce for the benefit of the automobile manufacturers of the country for reference purposes. The original cost runs into millions of dollars and the collection covers cars from the Mobile, Aero Car, Carter Car, Welch, Lozier, Alco and other auto history builders.

R. A. Brannigan, manager of the Chambers Patent Department has arranged filing space for ready reference to these drawings.

Hotel Latham, 28th St. and Fifth Ave., New York, for the purpose of securing new agencies for his company in Sweden.

Amerikanska Motor Importen is the oldest and one of the largest Ford dealers in Sweden and is the exclusive distributor in that country for Goodyear tires, and represents many accessory manufacturers there, including the Champion Spark Plug Co., etc.

### Stone Buys Chain Company

Julius F. Stone, a prominent capitalist of Columbus, Ohio, formerly connected with the Seagraves Mfg. Co., of that city, has purchased the entire capital stock of the Columbus-McKinnon Chain Co.

Branch factories are located at Lebanon, Pa., Tonawanda, N. Y., and St. Catherine's, Ont. General offices will remain at Columbus, Ohio.

### British Makers to Attend Show

Messrs. Hoyer and Allingham, joint managing directors of the Hoyal Body Corp., Ltd., late Chalmer & Hoyer, Ltd., London, will arrive in this country Jan. 26 for the purpose of visiting the Chicago automobile show and automobile plants in the Detroit district. They expect to be in this country approximately five weeks.

### Jensen Heads Accounting Dept.

C. W. Jensen, for the last twenty-five years secretary and treasurer of the Union Tannery, Kenosha, Wis., has resigned this position and accepted one as head of the accounting department of the Nash Motors Co.

### Serrano Reports Mexican Car Situation Difficult

Edmund H. Serrano, director of exports, Moon Motor Car Co., St. Louis, expresses the belief that the automobile situation in Mexico is in a difficult position, due to the long-time terms that some of the retailers are giving, the absence of an automobile finance company, and the need of assistance from banks.

The banks, says Mr. Serrano, charge a very high rate of interest and it is a practice of private individuals of discounting automobile paper, and charging anywhere from 1½ to 3½ per cent interest a month. Certain distributors there who are selling the most cars are the ones that are giving the longest terms, Mr. Serrano reports, and they are also the ones that have the greatest number of second-hand cars unsold.

### Lenz Plans Trip Abroad

Ernest W. Lenz, export representative of the Trinol Co., manufacturer of automotive products, Chicago, is planning a trip to Cuba, Santo Domingo, Porto Rico, Haiti, and several South American countries, about Feb. 1, in order to visit the customers of the firm and establish new business for the company in its line of piston pins, valves, and piston pin lock screws.

### Evans to Represent Cowles Co.

William A. Evans, associated with the automotive industry for the last twenty-one years, sixteen of which were spent with the English & Mersick Co., and the last five as president of the E. V. B. Mfg. Co., New Haven, Conn., has returned from an extended vacation in Florida to become associated with C. Cowles & Co., manufacturer of motor car body hardware, mountings, curtain-rollers, etc., and will represent the company in New York, Ohio, Indiana, Michigan, Illinois and Wisconsin.

### Nichols Assistant to President

W. W. Nichols, mechanical engineer of D. P. Brown & Co., Detroit, manufacturer of belting and transmission appliances, on Jan. 1 became assistant to W. R. Brown, general manager of the company.

Mr. Nichols, who was recently president of the Detroit chapter of the Society of Industrial Engineers, is well known among transmission engineers, and his services should be of great value in his new position.

### Lodwick and Blake Promoted

Curtis Pneumatic Machinery Co., manufacturer of mechanical appliances, including air compressors for tire inflation announce the promotion of John D. Lodwick to the position of sales promotion manager, and of L. C. Blake to advertising manager.

Both men have been connected with the company longer than fifteen years.



## 492,000 Commercial Vehicles in 1925

Production Record 100,000 More Than Highest Previous Mark—Exports 64,871

NEW YORK, Jan. 6—With a production record 100,000 units over the highest previous yearly mark, 1925 was by far the best of all years for the truck industry, says Windsor T. White, chairman, Motor Truck Committee, National Automobile Chamber of Commerce, in his review and forecast just issued. He estimates that 492,000 commercial cars were produced in 1925, having a wholesale value of \$500,000,000.

"The effect upon the whole industry of this greatly increased volume of business has been most salutary, taking up some of the slack which usually exists in an industry in which production capacity is in excess of the normal market requirements," Mr. White points out.

### Foreign Market Aids Selling

The year's good record is partly ascribed to the rapid development of the foreign market, with exports reaching an estimated total of 64,871 trucks and buses, not including foreign assemblies of American parts. The greatly increased wholesale value of the commercial car output is also due, Mr. White says, to the gain in bus output, which was 15,000 in 1925, against 10,000 in 1924. Although these figures are small as compared with the total of trucks and buses, yet the average price of buses is six or seven times that of the average truck.

Heavy-duty trucks during the last year met a good replacement market, as the result of the wearing out of vehicles manufactured during the war period. The railroads, also, in a greatly enhanced degree, adopted trucks and buses as auxiliaries of their established lines.

### Ford Buys Flying Terminal

CHICAGO, Jan. 4—Newspaper advices report that the Ford Motor Co. has purchased 1,400 acres of land in the Hammond-Maynard territory, contiguous to the Illinois-Indiana state line to be used for a large flying terminal. It was further reported that equipment for the manufacture, assembly and testing of airplanes on a wholesale scale would be set up there in connection with the extension of the Ford air lines throughout the West.

### Treasury Makes Refunds

WASHINGTON, Jan. 7—The Treasury Department reports that in the last year \$748,506 was refunded to the AC Spark Plug Co., \$147,217 to the Buick Motor Co., and \$110,118 to the Chevrolet Motor Co., all subsidiaries of General Motors. The sum of \$196,487 was refunded to the Bossiek Mfg. Co., a subsidiary of Stewart-Warner Speedometer Corp.

## Complete Calendar of Events in Connection with the New York National Automobile Show

### MONDAY, JAN. 11

- 10 A. M.: Motor Transport Congress Meeting, Roosevelt.
- 10 A. M.: N.A.C.C. World Motor Transport Congress, Roosevelt.
- 10 A. M.: N.A.C.C. Motor Truck Convention with World Motor Transport Congress, Roosevelt.
- 1030 A. M.: Meeting Board of Governors, Automotive Electric Ass'n. Astor.
- 1030 A. M.: Meeting of Rubber Association of America, Inc., Commodore.
- 11 A. M.: National Automobile Dealers Association, Third Annual Convention of Atlantic Coast District, Commodore.
- 1230 P. M.: Luncheon, Motor Transport Congress, Roosevelt.
- Luncheon, United States Advertising Corp., of Toledo, Biltmore.
- Luncheon Meeting, Members of Committee of 75, Rubber Association of America, Commodore.
- 2 P. M.: Motor Truck Convention, N.A.C.C. headquarters.
- 230 P. M.: Visit to Show by Foreign Delegates.
- 630 P. M.: Dinner to 1000 Guests of Rubber Association of America, Commodore.
- Dinner, Cadillac Motor Car Co., Biltmore.
- 630 P. M.: Dinner, Metropolitan Section, Society of Automotive Engineers, Commodore.
- Dinner, National Automobile Dealers Association, Commodore.
- 10 A. M.: Meeting, Board of Directors, American Automobile Association, Roosevelt.
- 10 A. M.: Motor Transport Congress, Roosevelt.
- 10 A. M.: N.A.C.C. Traffic Planning and Safety Committee Meeting.
- 11 A. M.: Conference of Franklin dealers, followed at 1230 by a luncheon given by President H. H. Franklin, in Ballroom, Commodore.
- 1230 P. M.: World Motor Transport Congress, International Luncheon, Roosevelt.
- 1230 P. M.: Luncheon, Auburn Automobile Co., Commodore.
- Meeting and Luncheon, Velle Motors Corp., Commodore.
- 1 P. M.: Luncheon, National Association of Automobile Show and Association Managers, Empire.
- 230 P. M.: Oldsmobile business meeting, Town Hall, 123 W. 43rd St.
- 230 P. M.: Motor Bus Inspection Tour by Foreign Delegates.
- Meeting and Dinner, Alumni Association of the Technical School for Automobile Body Designers and Engineers, McAlpin.
- 630 P. M.: Annual Oldsmobile dinner for Eastern dealers, East Ballroom, Commodore.
- 730 P. M.: Dinner, Motor & Accessory Manufacturers Association, Astor.
- 730 P. M.: Dinner, Studebaker Corp., Plaza.
- Annual Dinner, Chevrolet Motor Co., Commodore.
- 8 P. M.: Flint Motor Co. Banquet, Roosevelt.

### TUESDAY, JAN. 12

- 10 A. M.: World Motor Transport Congress, Roosevelt.
- 10 A. M.: N.A.C.C. Directors' Meeting.
- 1230 P. M.: Luncheon, Motor Transport Congress, Highway Division, Roosevelt.
- Luncheon, Oakland Motor Car Co., Commodore.
- 1 P. M.: Luncheon, Chilton Class Journal Co., Commodore.
- 230 P. M.: Traffic Study Tour by Foreign Delegates.
- 630 P. M.: Banquet, National Automobile Chamber of Commerce, Commodore.
- Third Annual Automotive Electrical Banquet, Grand Ballroom, Astor.

### WEDNESDAY, JAN. 13

- Meeting, Motor Transport Congress, Roosevelt.

### THURSDAY, Jan. 14

- Luncheon, Chrysler Sales Group, Commodore.
- Luncheon, Distributors and Dealers, Rickenbacker Motor Co., Commodore.
- 630 P. M.: Dinner and Dance, Greater New York Tire Dealers Ass'n, Pennsylvania.
- 630 P. M.: Dinner, Society of Automotive Engineers, Astor.
- 630 P. M.: Dinner, Overseas Club, Automobile Boosters International No. 9, Empire.
- 7 P. M.: Annual Dinner and Entertainment, Paige-Detroit Motor Car Co., Commodore.
- 10 P. M.: Boxing Show, Boosters Club No. 13, of New York, 153 West 64th St.
- Meeting, Dinner, Peerless Motor Car Co., Astor.

# Coming Events

## SHOWS

Jan. 11-15—American Road Builders Association Show, Chicago, Coliseum.

Jan. 9-16—New York, N.A.C.C. National Annual Show, Grand Central Palace.

Jan. 18-23—New York, Twelfth National Motorcycle, Bicycle and Accessory Show, New Madison Square Garden.

Jan. 22-30—National Motor Boat Show, Grand Central Palace, New York.

Jan. 30-Feb. 6—Chicago N.A.C.C. National Annual Show, Coliseum.

Jan. 30-Feb. 6—Chicago, Automobile Salon, Hotel Drake.

Feb. 13-Mar. 15—International Automobile Show, Copenhagen, Denmark.

## CONVENTIONS

Jan. 11-15—American Road Builders Association Convention and Exposition, Chicago, Congress Hotel.

Jan. 21-22—Hotel Statler, Buffalo, N. Y., Winter Sectional Meeting, American Society for Steel Treating.

Feb. 1-3—Chicago, Ninth Annual National Automobile Dealers Association, La Salle Hotel.

Feb. 2-3—Congress Hotel, Chicago, Automotive Electric Service Association.

## S.A.E. MEETINGS

### National

Jan. 14—New York, Annual Dinner, Hotel Astor.

Jan. 26-29—Detroit, Annual Meeting.

## Spring Dating Again Disturbs Tire Men

### Rubber Association May Take a Hand in Ironing Out Difficulties

AKRON, OHIO, Jan. 7—The Spring dating problem has appeared again in the tire industry. Although the original agreement on Spring dating was to be effective only until Jan. 1, 1926, the manufacturers decided several weeks ago to try and eliminate it altogether. It is learned on good authority, however, that a number of tire companies have started now to make Spring dating shipments.

#### To Discuss Problems in Show Week

The confusion that has arisen over the problem may be ironed out at a meeting of the Rubber Association of America while the National Automobile Show is in session in New York, Jan. 9-16. Members of the association will also discuss measures now under consideration for relieving the world shortage of crude rubber. One of the most important of these is the proposed establishment of rubber plantations in the Philippines. It is not believed now that the rubber shortage will be as acute in 1926 as was at first indicated. There has been an enormous increase in the output of rubber-reclaiming plants, and shipments of crude rubber into this country have been slowly increasing. Most rubber manufacturers look for a greater shortage of crude rubber in 1927 than will be seen this year, and are already taking steps to take care of their needs in that year.

## Soviet Plans Automobile Manufacturing Trust

WASHINGTON, Jan. 7—A passenger automobile manufacturing trust, capable of turning out between 3,000 and 5,000 cars annually will be formed at Lenin-grad early in 1926, it is announced by the Russian Information Bureau here. During the first two or three years, the announcement explains, the output will be limited to cars assembled from imported parts.

Building of motor trucks, says the same authority, has been already organized

## Coming Feature Issues of Chilton Class Journal Publications

Jan. 14—Motor World Wholesale—New York Show Report.

Feb. 4—Motor Age—Chicago Show Number.

Feb. 4—Motor World Wholesale—Chicago Show Report.

Feb. 18—Automotive Industries—Statistical Issue.

and during the next three years 2,535 trucks of 1½ and 3 tons will be turned out at Soviet factories. In addition to the manufacture of Soviet trucks and motors out of domestic materials, the assembling of 3-ton trucks from imported parts will be carried on by the automobile plants under the supervision of the Supreme Economic Council. Seventy-five hundred of these assembled trucks will be turned out during the next three years.

## Body Designers to Meet and Dine Jan. 13

NEW YORK, Jan. 4—The Alumni Association of the Technical School for Automobile Body Designers and Engineers, organized April 28, 1904, will hold its annual meeting and dinner at Hotel McAlpin, New York, Jan. 13. Many of the alumni visiting the automobile show are expected to attend.

This was the first technical school established in this country in the interest of body-designing and building. There are 222 graduates, many holding responsible positions as body engineers in the largest plants throughout the country.

## Dodge and Graham Brothers' Dealers in Convention

DETROIT, Jan. 7—Upwards of 2,500 representatives of Dodge and Graham Brothers will end their three-day annual dealer meeting here tomorrow.

The first day was given over to inspection of the Dodge and Graham plants. The other two days were to be given over to business sessions.

## G. E. Roberts to Talk at Truck Convention

### City Bank Official to Explain Conditions Affecting the Industry

NEW YORK, Dec. 31—George E. Roberts, vice president of the National City Bank, will be the leading speaker at the Motor Truck Convention to be held at N.A.C.C. headquarters at 2 P. M., Jan. 11, under the auspices of the National Motor Truck Committee. He will discuss business conditions as affecting the truck industry.

The convention is open to non-members as well as members of the National Automobile Chamber of Commerce.

Truck and bus manufacturers and others interested are also invited to attend the World Motor Transport Congress session at 10 A. M., at the Hotel Roosevelt, and the Congress luncheon at the same hotel at 12.30, at which Robert C. Graham, vice-president of Dodge Bros., Inc., will speak.

#### To Consider Ainey-Cummins Bill

At the afternoon session of the bus convention, the Ainey-Cummins bill for regulation of truck and bus operation in interstate commerce will be discussed by George P. McCallum, chairman of the National Bus Legislative Committee and president of the Michigan Highway Transportation Association, and by Theodore D. Pratt, chairman of the Truck Users National Conference and general manager of the Motor Truck Association of America, Inc. Mr. McCallum will tell why bus operators favor the bill, and Mr. Pratt will explain why truck operators oppose it. Their speeches will be followed by an open forum. The presiding officer will be Windsor T. White, chairman of the Motor Truck Committee.

After the open forum it is probable that resolutions will be adopted with reference to the Ainey-Cummins bill.

## Mullins Body Plans Increase

SALEM, OHIO, Jan. 5—The Mullins Body Corp.'s plant is to go on a new and increased schedule at once, according to announcement here.